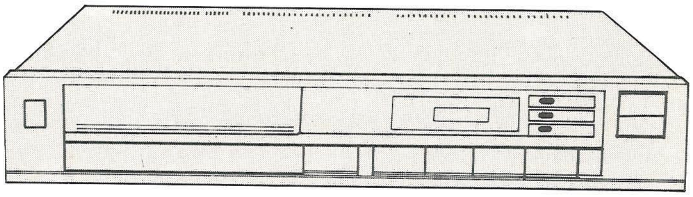
GoldStar

COMPACT DISC PLAYER
SERVICE MANUAL

CAUTION
BEFORE SERVICING THE CHASSIS, READ THE "SAFETY PRECAUTIONS", IN THIS MANUAL



MODEL: GCD-616

GoldStar

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SAFETY PRECAUTION

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual, electrical components having such features are identified by a ⚠ in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

WARNING !!

When servicing, do not approach the laser exit with the eye too closely. In case it is necessary to confirm laser beam emission, be sure to observe from a distance of more than 30 cm from the surface of the objective lens on the optical pick-up block.

SPECIFICATIONS

System :	Compact disc digital audio system
Disc :	Compact disc
Laser :	Semiconductor Laser ($\lambda = 780$ nm)
Spindle Speed :	200 r.p.m. to 500 r.p.m.
Error Correction System :	Cross Interleave Reed & solomon Code (CIRC)
Scan Velocity :	1.2-1.4 m/sec.
Number of Channels :	2
Signal to Noise Ratio :	90 dB (at 1 kHz)
Frequency Response :	5 — 20,000 Hz $^{+1}_{-1,5}$ dB
Harmonic Distortion :	Less than 0.05% (at 1 kHz)
Dynamic Range :	More than 90 dB
Channel Separation :	More than 85 dB (at 1 kHz)
Wow and Flutter :	Below measurable limit
Outputs :	Line outputs Output level 2V rms (MSB) Load impedance over 10 kilohms

Disc

Track Pitch :	1.6 μm
Sampling Frequency :	44.1 kHz
Quantization :	16-bit linear quantizing/channel
Modulation System :	EFM
Diameter	120 mm
Thickness :	1.2 mm

General

Power Requirements:	AC 120 60 Hz / AC 220V 50 Hz
Power Consumption :	Max. 10 W
Dimensions :	430×77×310 mm (W×H×D)
Weight :	4.0 Kg (9 lbs)

DISASSEMBLY INSTRUCTIONS

TOP CASE REMOVAL (See Figure 1)

1. Remove four screws retaining top case. (Figure 1 Reference 1)
2. Then, remove the top case from the bottom case.

FRONT CASE REMOVAL (See Figure 1)

1. Remove two screws retaining front case. (Figure 1 Reference 2)
2. Remove two screws retaining front case.(Figure 1 Reference 3)
3. Then, remove the front case from the bottom case.

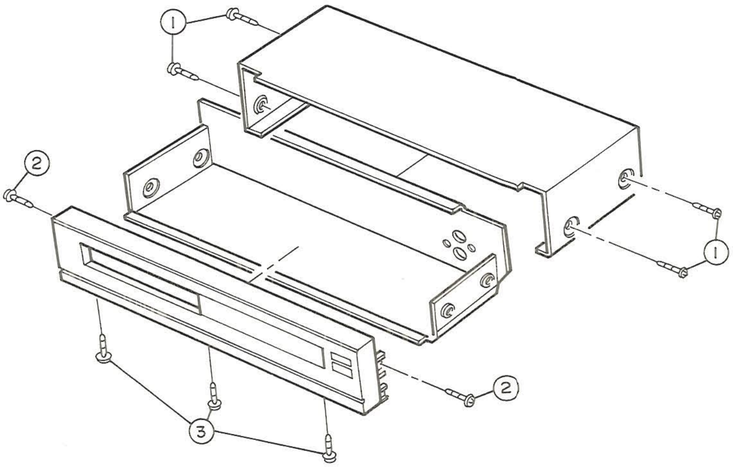


Figure 1

BOX REMOVAL (See Figure 2)

1. Take off the top and the front case.
2. For opening the box, rotate the loading gear located below mechanism left in hand. (Figure 2)
3. After be going and coming back the box about three times, pull out the box forward fast.

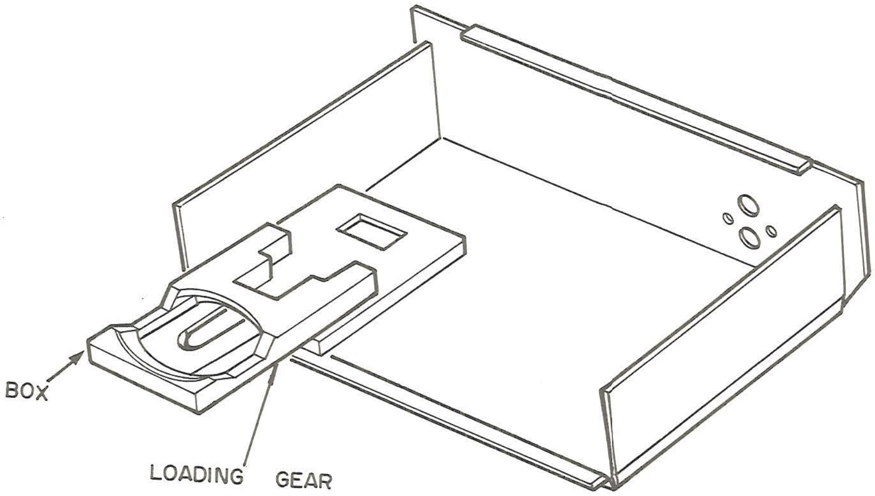


Figure 2

MECHANISM REMOVAL (See Figure 3)

1. Remove one screw. (Figure 3 Reference 4)
2. Pull out the mechanism backward.

MAIN P.C. BOARD REMOVAL (See Figure 3)

Remove two screws. (Figure 3 Reference 5)

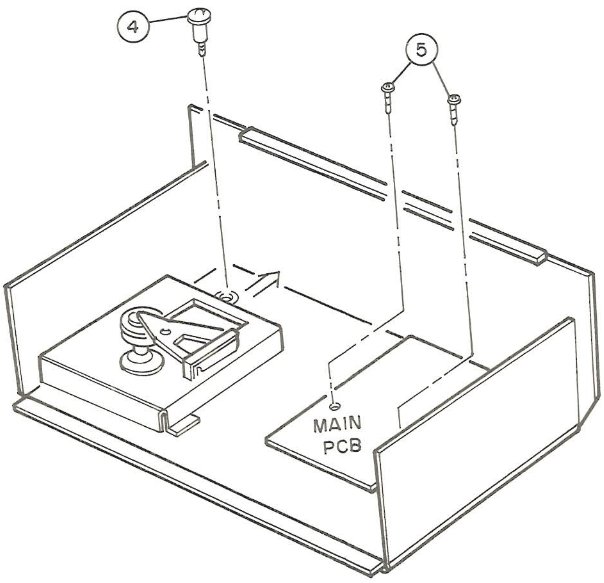


Figure 3

SWITCH P.C. BOARD (See Figure 4)

Remove two screws. (Figure 4 Reference 6)

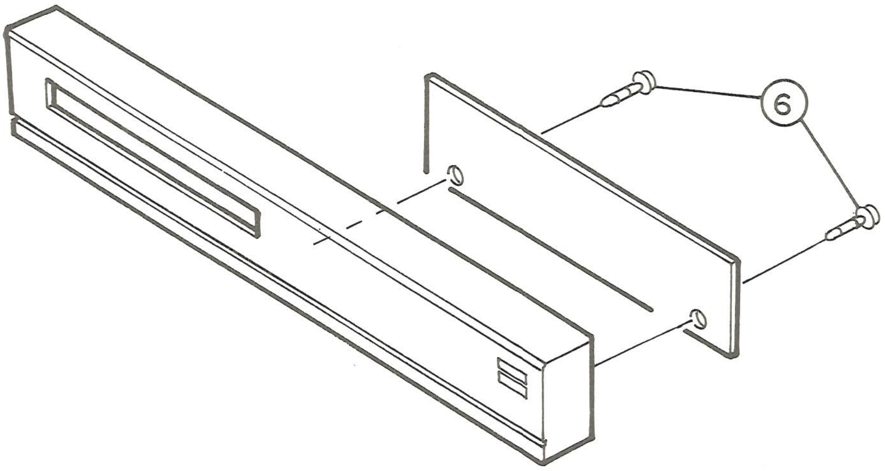
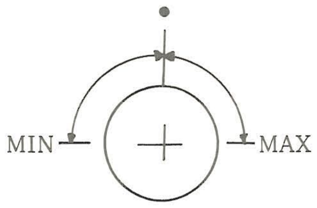


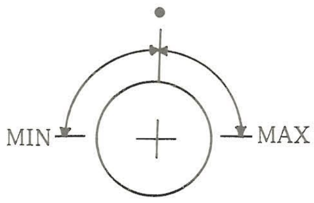
Figure 4

ADJUSTMENTS

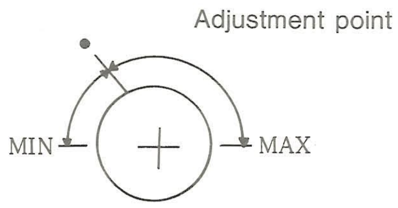
*** Presetting**



VR101 (Tracking Balance)
(1/2 Position)



VR103 (Focus Gain)
(1/2 Position)


Adjustment point
MIN
MAX

VR105 (Tracking Gain)
(1/3 Position)

*** Test and Adjustment Point**

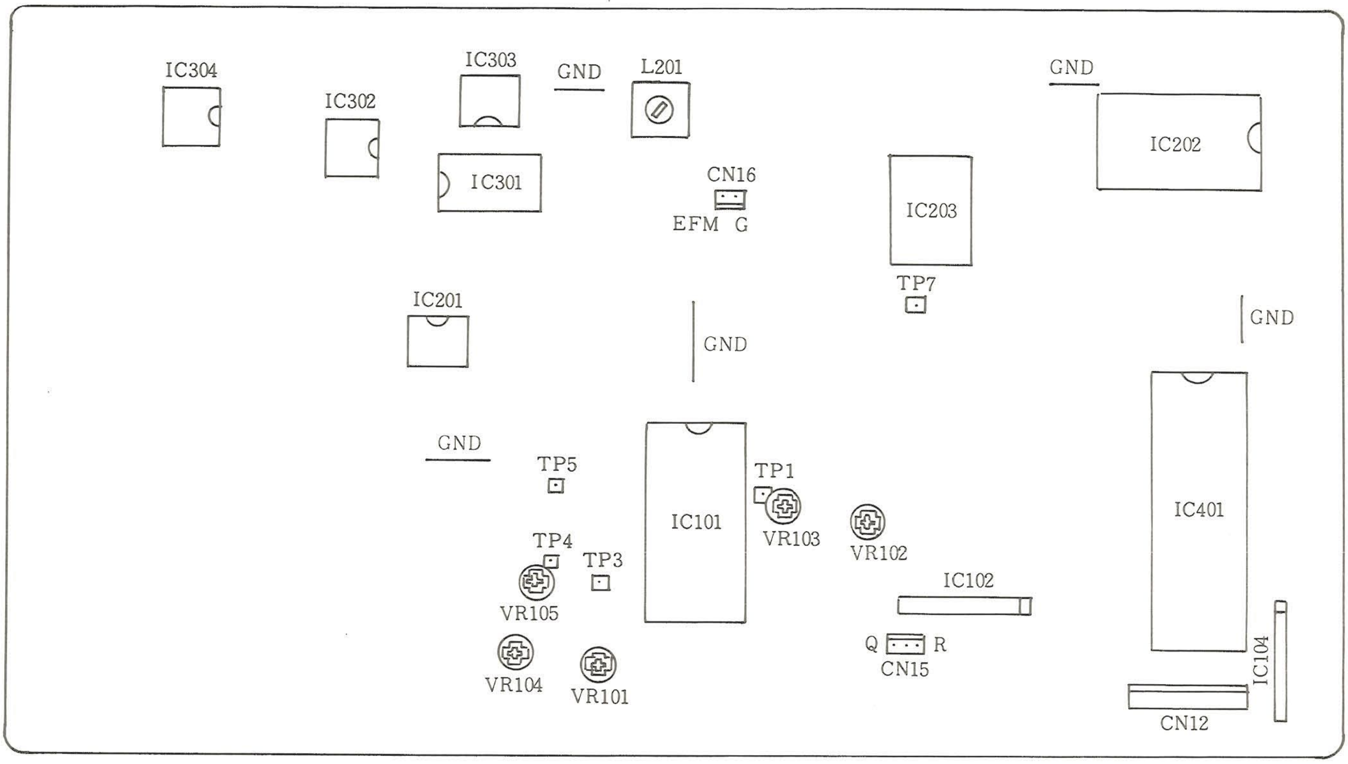

IC304
IC302
IC303
GND
L201
GND
IC202
IC301
CN16
EFM G
IC203
TP7
IC201
GND
GND
GND
TP5
TP1
IC101
VR103
VR102
IC401
TP4
TP3
VR105
IC102
Q R
CN15
VR104
VR101
IC104
CN12

Figure 5. Main P.C. Board

1. Focus Offset Adjustment

(1) Turn on the power switch. (STOP mode)
(2) Connect digital volt meter to main board test point "R" (CN15) and GND.
(3) Adjust VR102 so that digital volt meter reading is DC 0±0.05V.

2. Tracking Offset Adjustment

(1) Turn on the power switch. (STOP mode)
(2) Connect digital volt meter to main board test point "Q" (CN15) and GND.
(3) Adjust VR104 so that digital volt meter reading is DC 0±0.05V.

3. Focus Search Confirmation

(1) Insert CNJ12 in CN12.
(2) Connect oscilloscope to main board test point "R" and GND.
(3) Turn on the power switch, and comfirm to appear the following figure 6.

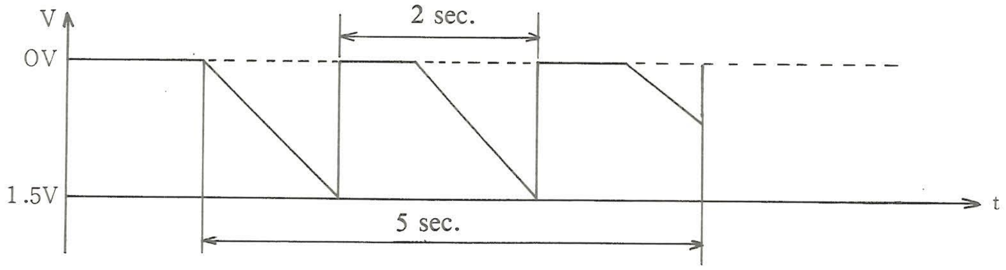


Figure 6

4. PLL Adjustment

(1) Turn on the power switch. (STOP mode)
(2) Connect frequency counter to main board test point TP7 and GND.
(3) Short-circuit the CN16 on the main board.
(4) Adjust L201 so that frequency counter reading is 4.3218 MHz ±20 kHz.
(5) After adjustment, return CN16 to the original state.

5. Tracking Balance Adjustment

(1) Connect oscilloscope to main board test point TP3 (TER) and GND.
(2) Short-circuit between "Q" and TP5 on the main board.
(3) Insert the disc (YEDS-7) and press PLAY button.
(4) Adjust VR101 so that oscilloscope waveform is symmetrical above and below, relative to OV.

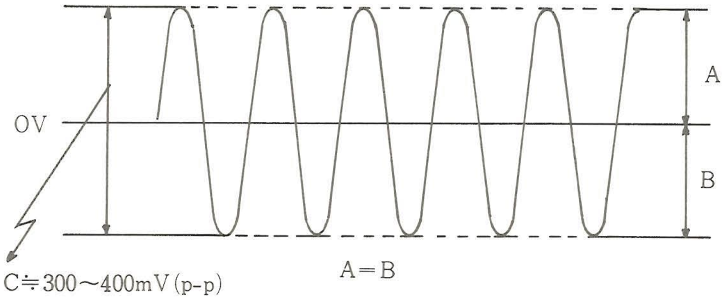


Figure 7

6. Diffraction Grating Adjustment

In 5 step, align the oscilloscope voltage level (peak to peak) largest.

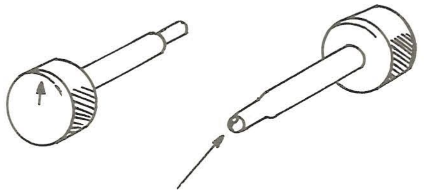


Figure 8. Diffraction grating adjustment driver

7. Jitter Adjustment

(1) Connect oscilloscope to main board EFM (CN16) and GND.
(2) Insert the disc (YEDS-7) and press PLAY Button.
(3) Adjust at the middle of disc.
(4) Adjust the head-base-skew screw on the MD so that eye-pattern is clear.

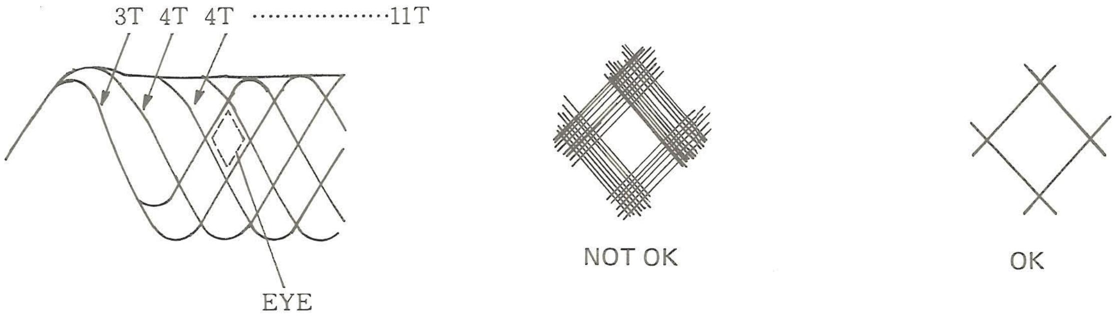

3T 4T 4T ················11T
EYE
NOT OK
OK

Figure 9. Eye Pattern

8. High Frequency Level Confirmation

(1) Insert the disc (YEDS-7) and press PLAY button.
(2) Confirm that oscilloscope voltage level is 1.4V $\leqq$ A $\leqq$ 2.0V

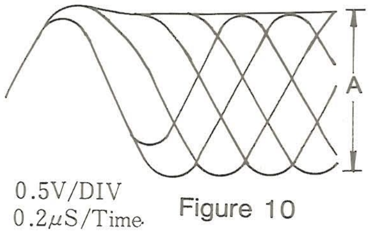

A
0.5V/DIV
0.2μS/Time

Figure 10

9. Focus Gain Adjustment

Measure focus and tracking gain adjustment by following the gain checker.

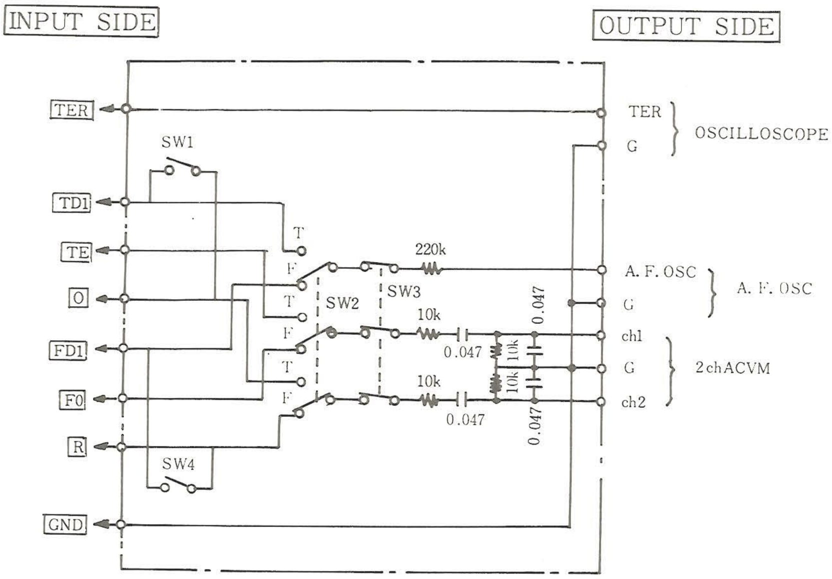

INPUT SIDE
OUTPUT SIDE
TER
TD1
TE
O
FD1
F0
R
GND
SW1
SW2
SW3
SW4
T
F
220k
10k
0.047
TER
G
OSCILLOSCOPE
A. F. OSC
G
A. F. OSC
ch1
G
ch2
2chACVM

Figure 11. Gain Checker

SW1 — Diffraction Grating,
EF Balance Adjustment
SW2 — Focus Gain, Tracking Gain
SW3 — BPF On/Off
SW4 — Laser Output Confirmation

(1) AF OSC (800 Hz, 4.5V rms) signal supplies across 220 kΩ.
(2) Connect between main board test point "FO" (TP1) and ch1 to BPF, connect between main board test point R and ch2 to BPF, and 2ch volt meter measure ch1 and ch2.
(3) Adjust VR103 so that gain gap is 12.5 dB.
Example) General gain level FO; −31dB
R; −17dB
Level difference is 14dB

10. Tracking Gain Adjustment

(1) AF OSC (1 kHz, 100mV rms) signal supplies across 220 kΩ.
(2) Connect between main board test point "Q" and ch2 to BPF, connect between main board test point "TE" (TP4) and ch1 to BPF, and 2ch volt meter measure ch1 and ch2.
(3) Adjust VR105 so that gain gap is 8.5dB.
Example) General gain level TE; −32.5dB
Q; −24dB
Level difference is 8.5dB

11. Kicking Comfirmation

(1) Connect oscilloscope to main board test point "TER" (TP3) and GND.
(2) Press the ►► mode or ◄◄ mode for 3 seconds, at the time observe waveform.

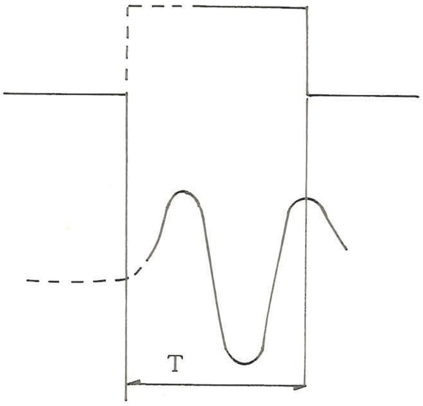
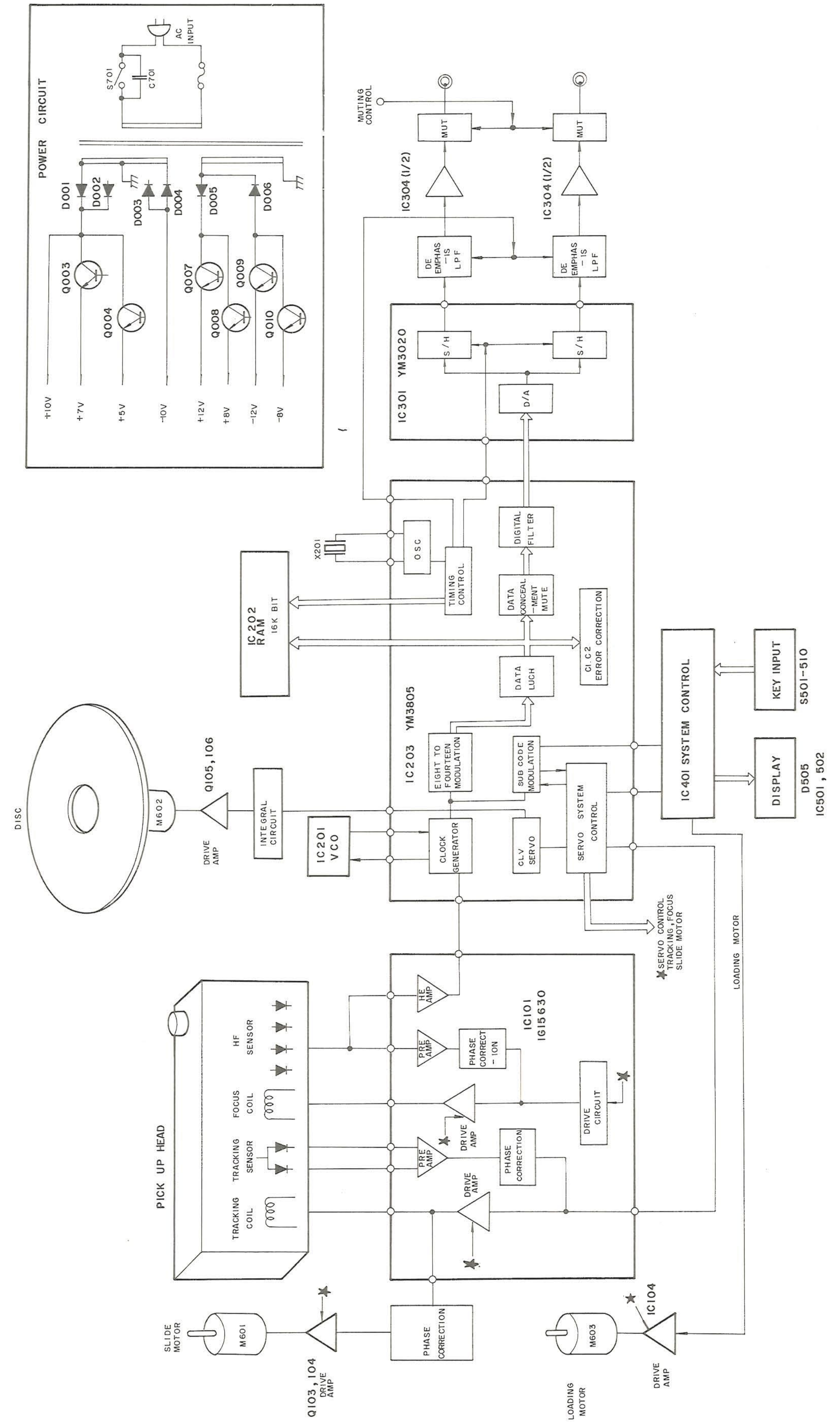


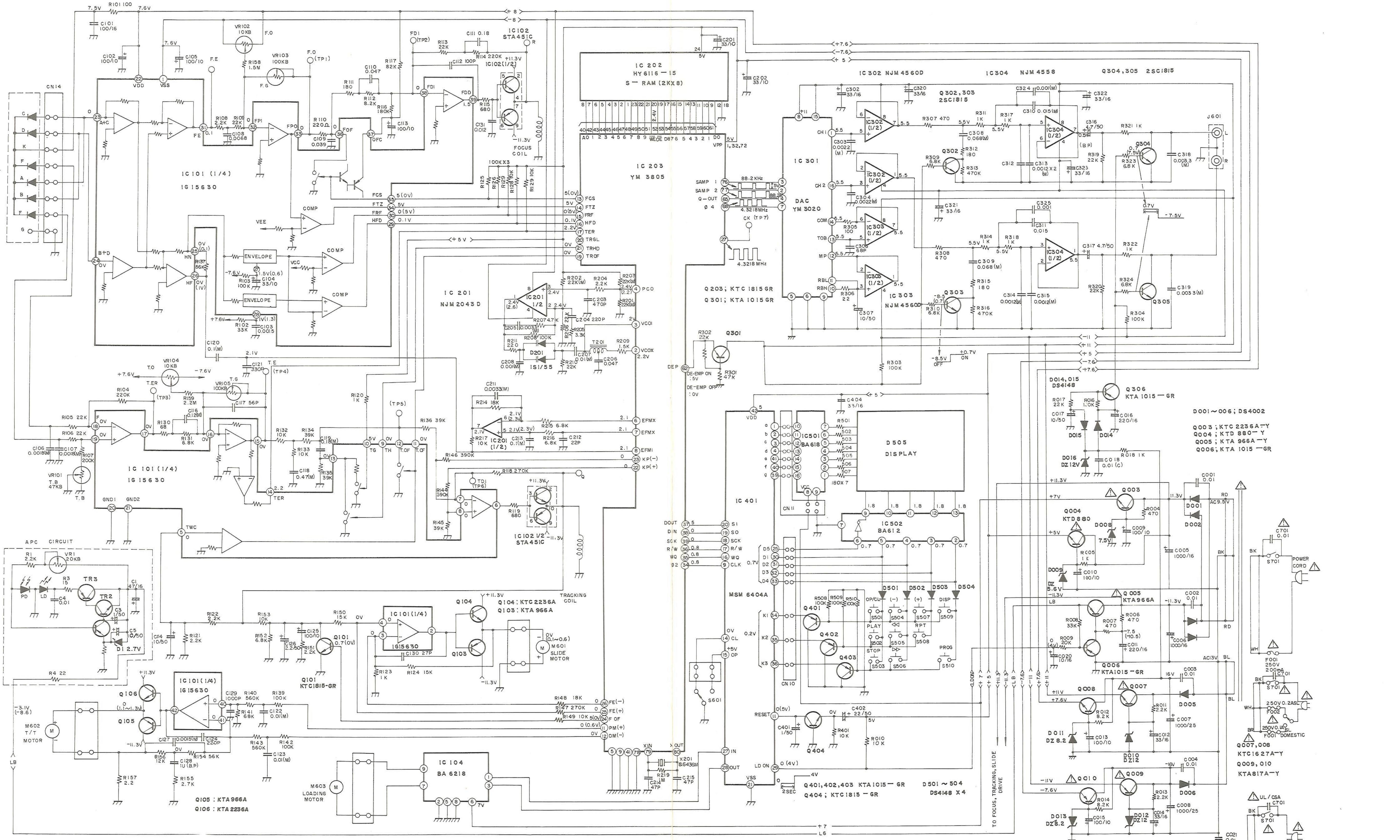
Figure 12

A cycle of "TER" signal must be 0.7 cycle < X < 2.3 cycle in T. It changes reverse phase that ◄◄ mode is pressed.

BLOCK DIAGRAM


POWER CIRCUIT
AC INPUT
S701
C701
D001
D002
D003
D004
D005
D006
Q003
Q004
Q007
Q008
Q009
Q010
+10V
+7V
+5V
-10V
+12V
+8V
-12V
-8V
MUTING CONTROL
MUT
MUT
IC304 (1/2)
IC304 (1/2)
DE EMPHAS -IS LPF
DE EMPHAS -IS LPF
S/H
S/H
D/A
IC301 YM3020
X201
OSC
TIMING CONTROL
DIGITAL FILTER
DATA CONCEAL -MENT MUTE
C1. C2 ERROR CORRECTION
DATA LUCH
IC 202 RAM 16K BIT
IC203 YM3805
EIGHT TO FOURTEEN MODULATION
SUB CODE MODULATION
SYSTEM CONTROL
SERVO CONTROL
CLV SERVO
CLOCK GENERATOR
IC201 VCO
INTEGRAL CIRCUIT
Q105, 106
DRIVE AMP
DISC
M602
IC401 SYSTEM CONTROL
KEY INPUT
S501-510
DISPLAY
D505
IC501, 502
SERVO CONTROL TRACKING, FOCUS SLIDE MOTOR
LOADING MOTOR
PICK UP HEAD
HF SENSOR
FOCUS COIL
TRACKING SENSOR
TRACKING COIL
HF AMP
PRE AMP
PHASE CORRECT -ION
IC101 IG15630
DRIVE CIRCUIT
DRIVE AMP
PRE AMP
PHASE CORRECTION
DRIVE AMP
PHASE CORRECTION
SLIDE MOTOR
M601
Q103, 104 DRIVE AMP
LOADING MOTOR
M603
IC104
DRIVE AMP

SCHEMATIC DIAGRAM



CN14
IC101 (1/4) IG15630
IC102 STA451C
IC102 1/2 STA451C
IC201 NJM2043D
IC202 HY6116-15 S-RAM (2KX8)
IC203 YM3805
IC104 BA6218
IC301 DAC YM3020
IC302 NJM4560D
IC303 NJM4560D
IC304 NJM4558
Q302,303 2SC1815
Q304,305 2SC1815
Q203; KTC1815GR
Q301; KTA1015GR
Q104: KTC2236A
Q103: KTA966A
Q105 : KTA966A
Q106 : KTA2236A
Q101 KTC1815-GR
APC CIRCUIT
FOCUS COIL
TRACKING COIL
M601 SLIDE MOTOR
M602 T/T MOTOR
M603 LOADING MOTOR
ENVELOPE
COMP
IC401 MSM6404A
IC501 BA618
IC502 BA612
D505 DISPLAY
J601
DE-EMP ON
DE-EMP OFF
Q401,402,403 KTA1015-GR
Q404; KTC1815-GR
D501~504 DS4148 X4
D001~006; DS4002
Q003; KTC2236A-Y
Q004; KTD880-Y
Q005; KTA966A-Y
Q006; KTA1015-GR
Q007,008 KTC1627A-Y
Q009,010 KTA817A-Y
D014,015 DS4148
Q306 KTA1015-GR
TO FOCUS, TRACKING, SLIDE DRIVE
POWER CORD
S701
F001 250V 200mA
UL/CSA
DOMESTIC

PRODUCT SAFETY COMPONENTS

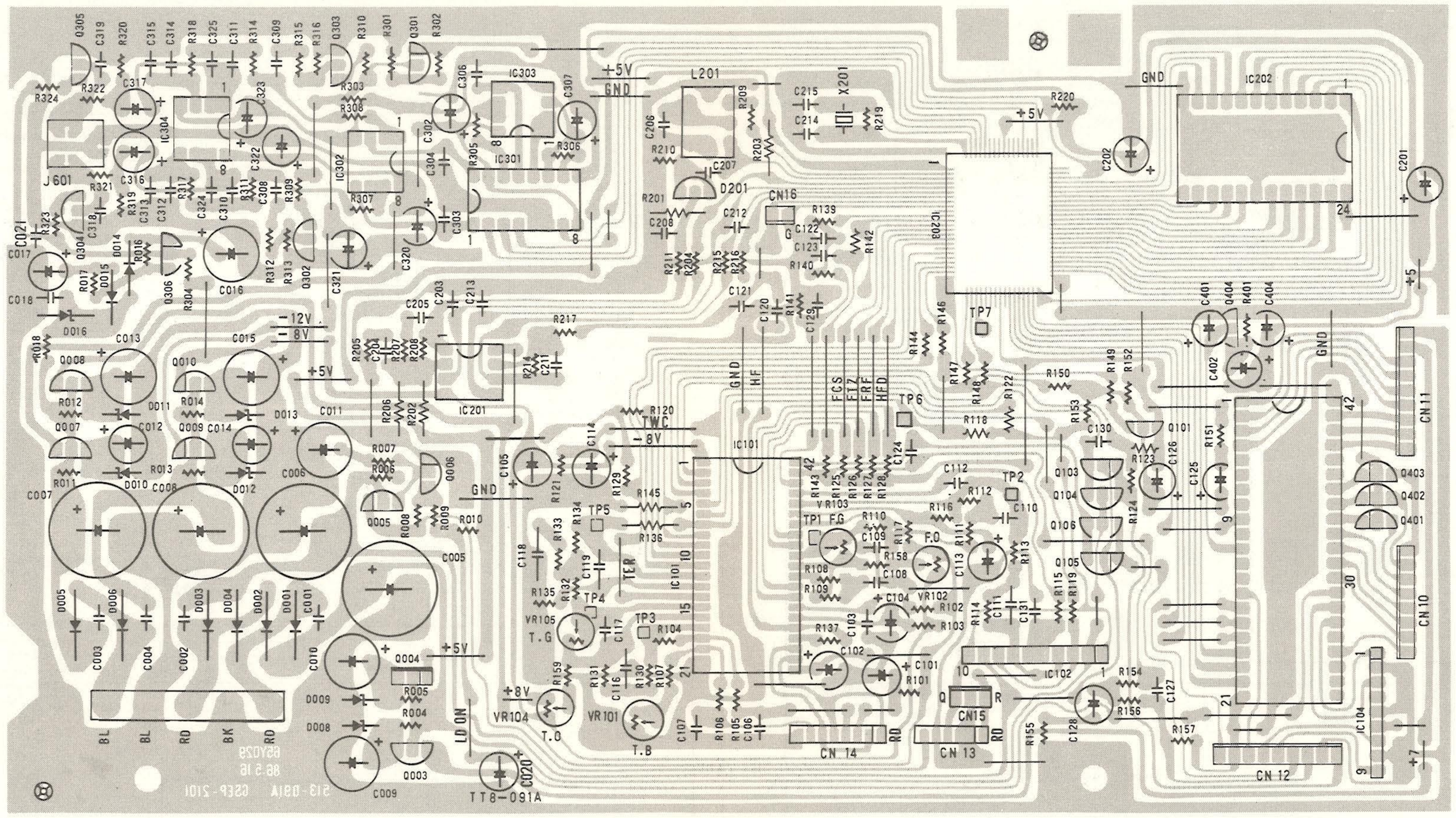
THE DESIGN OF THIS SET CONTAINS MANY CIRCUITS AND COMPONENTS INCLUDED SPECIFICALLY FOR SAFETY PURPOSE FOR CONTINUED PROTECTION NO. CHANGED SHOULD BE MADE TO THE ORIGINAL DESIGN AND COMPONENTS IDENTIFIED BY A ⚠ ON THE SCHEMATIC SHOULD BE REPLACED WITH EXACT FACTORY REPLACEMENT PARTS. THE USE OF UNAUTHORIZED SUBSTITUDE PARTS MAY CREATE A SHOCK FIRE, LASER OR OTHE HAZARDS. SERVICE SHOULD BE PERFORMED BY QUALIFIED PERSONNEL ONLY.

RELIABILITY AND PERFORMANCE

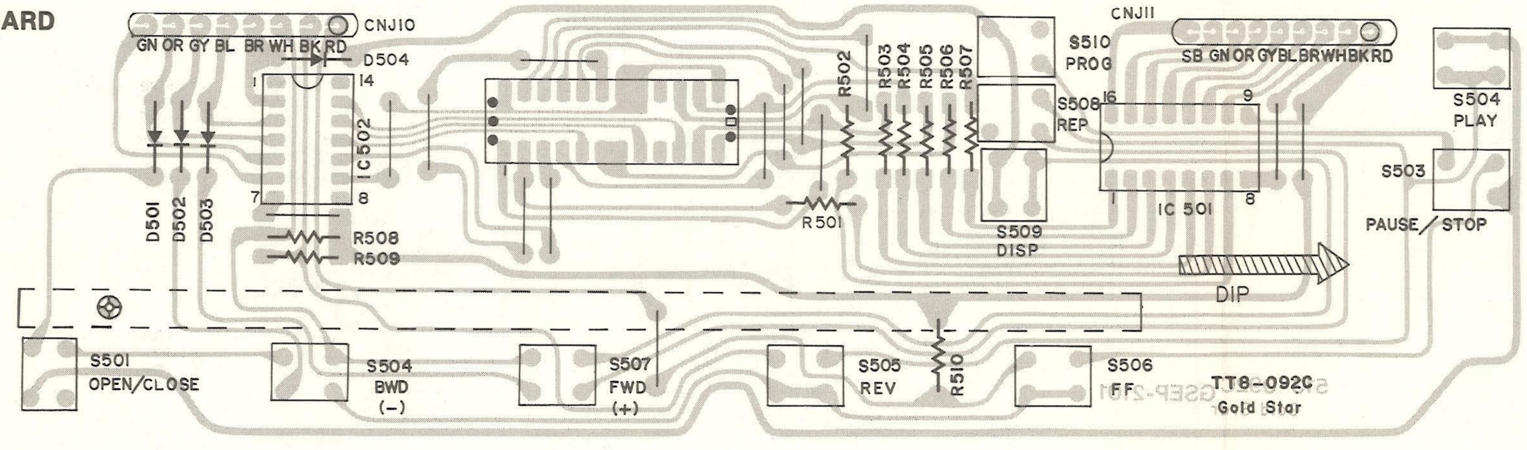
FOR CONTINUED REALIABILITY AND PERFORMANCE EXACT FACTORY REPLACEMENTS ARE RECOMMENDED FOR ALL OTHE REPLACED IF A SUBSTITUTE MUST BE USED. BE SURE ITS QUALITY AND SPECIFICATIONS ARE IDENTICAL TO THE ORIGINAL PART.

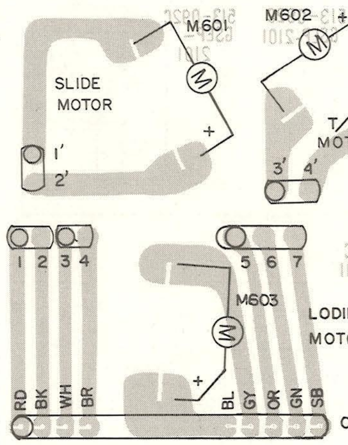
PRINTED CIRCUIT BOARD

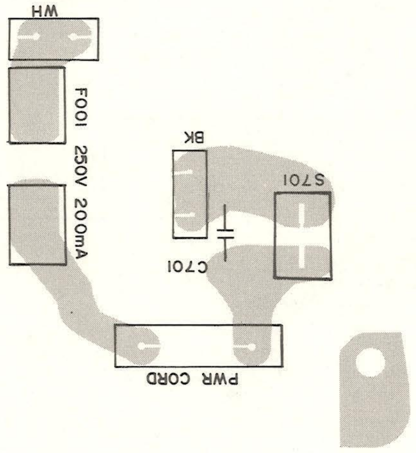
MAIN P.C. BOARD
(TOP VIEW)


IC201
IC202
IC203
IC301
IC302
IC303
IC304
IC101
IC102
IC104
CN10
CN11
CN12
CN13
CN14
CN15
CN16
J601
L201
X201
+5V
GND
-12V
-8V
+8V
TP1 FG
TP2
TP3
TP4
TP5
TP6
TP7
VR101
VR102
VR103
VR104
VR105
TWC
FCS
FTZ
TER
HF
HFD
T.G
T.O
T.B
F.O
LD ON
TT8-091A
513-091A GSEP-2101

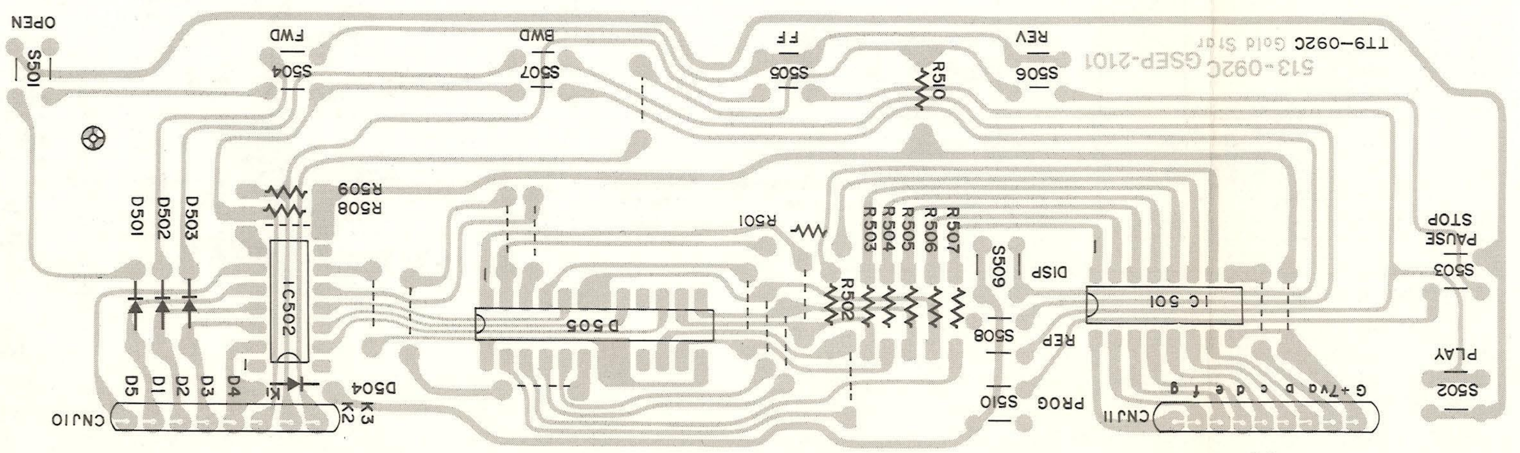
SWITCH P.C. BOARD
(TOP VIEW)

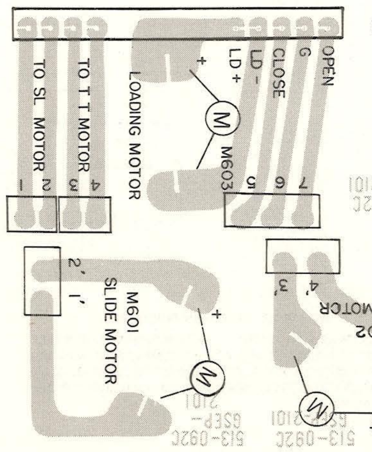

CNJ10
GN OR GY BL BR WH BK RD
D504
IC502
D501
D502
D503
R508
R509
R501
R502
R503
R504
R505
R506
R507
S510 PROG
S508 REP
S509 DISP
CNJ11
SB GN OR GY BL BR WH BK RD
IC 501
S504 PLAY
S503
PAUSE/ STOP
DIP
S501 OPEN/CLOSE
S504 BWD (−)
S507 FWD (+)
S505 REV
R510
S506 FF
TT8-092C
Gold Star

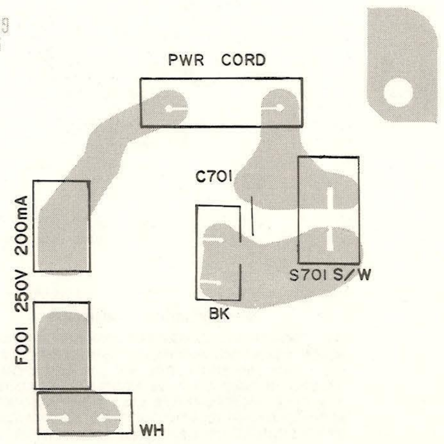

M601
SLIDE MOTOR
M602
T/T MOTOR
1'
2'
3'
4'
1 2 3 4
5 6 7
M603
LODING MOTOR
RD BK WH BR
BL GY OR GN SB
CNJ12


WH
F001 250V 200mA
BK
S701
C701
PWR CORD

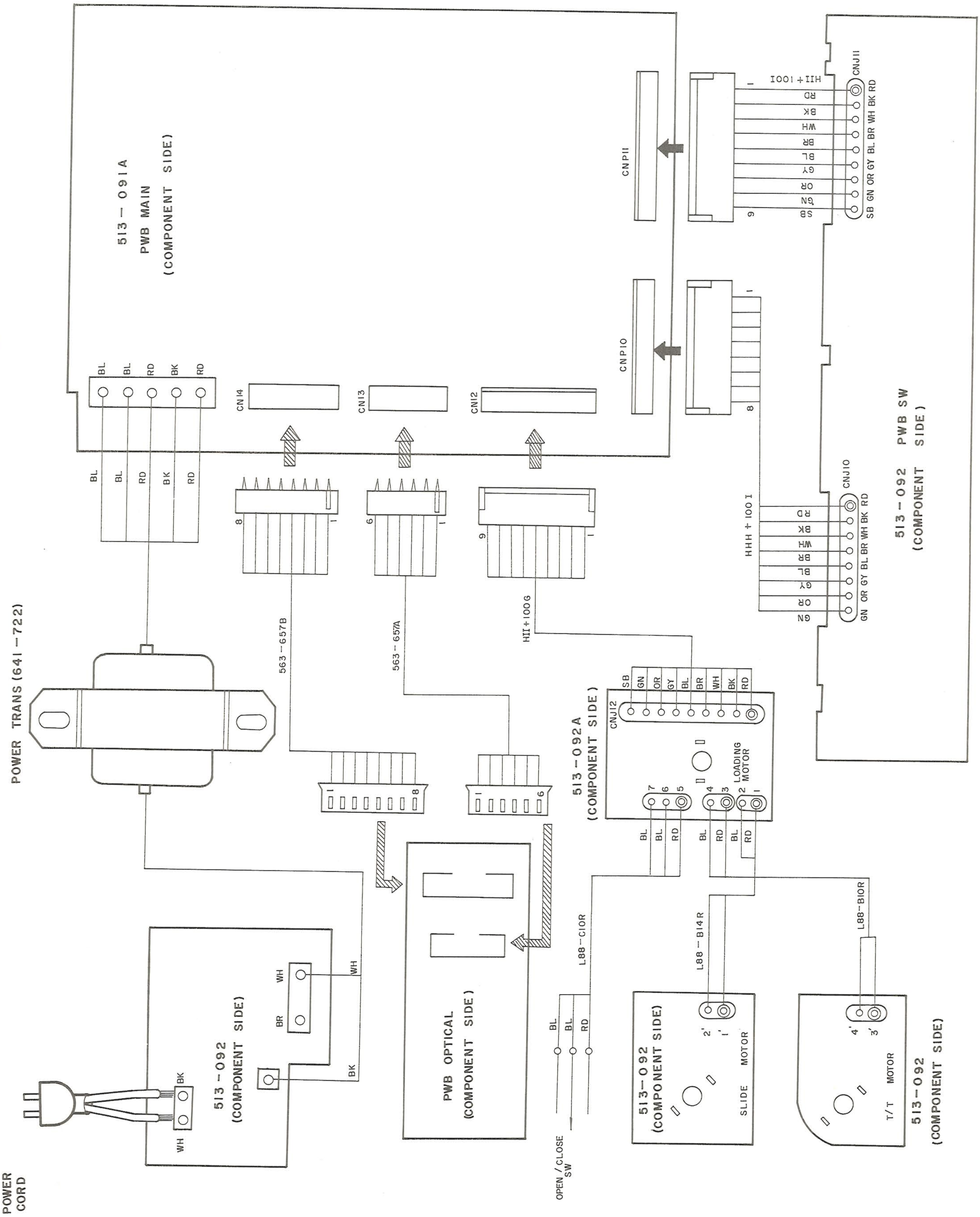
(BOTTOM VIEW)


OPEN
S501
FWD
S504
BWD
S507
FF
S505
R510
REV
S506
TT9-092C Gold Star
513-092C GSEP-2101
D501
D502
D503
R508
R509
R501
IC502
D505
R502
R503
R504
R505
R506
R507
S509 DISP
S508 REP
IC 501
S503 PAUSE STOP
PLAY
S502
S510 PROG
D5 D1 D2 D3 D4
D504
K1 K2 K3
CNJ10
CNJ11
G +7V a b c d e f g


CNJ12
TO SL MOTOR
TO T T MOTOR
LOADING MOTOR
LD +
LD −
CLOSE
G
OPEN
M603
1 2 3 4
5 6 7
M601 SLIDE MOTOR
M602 T/T MOTOR
513-092C
GSEP-2101

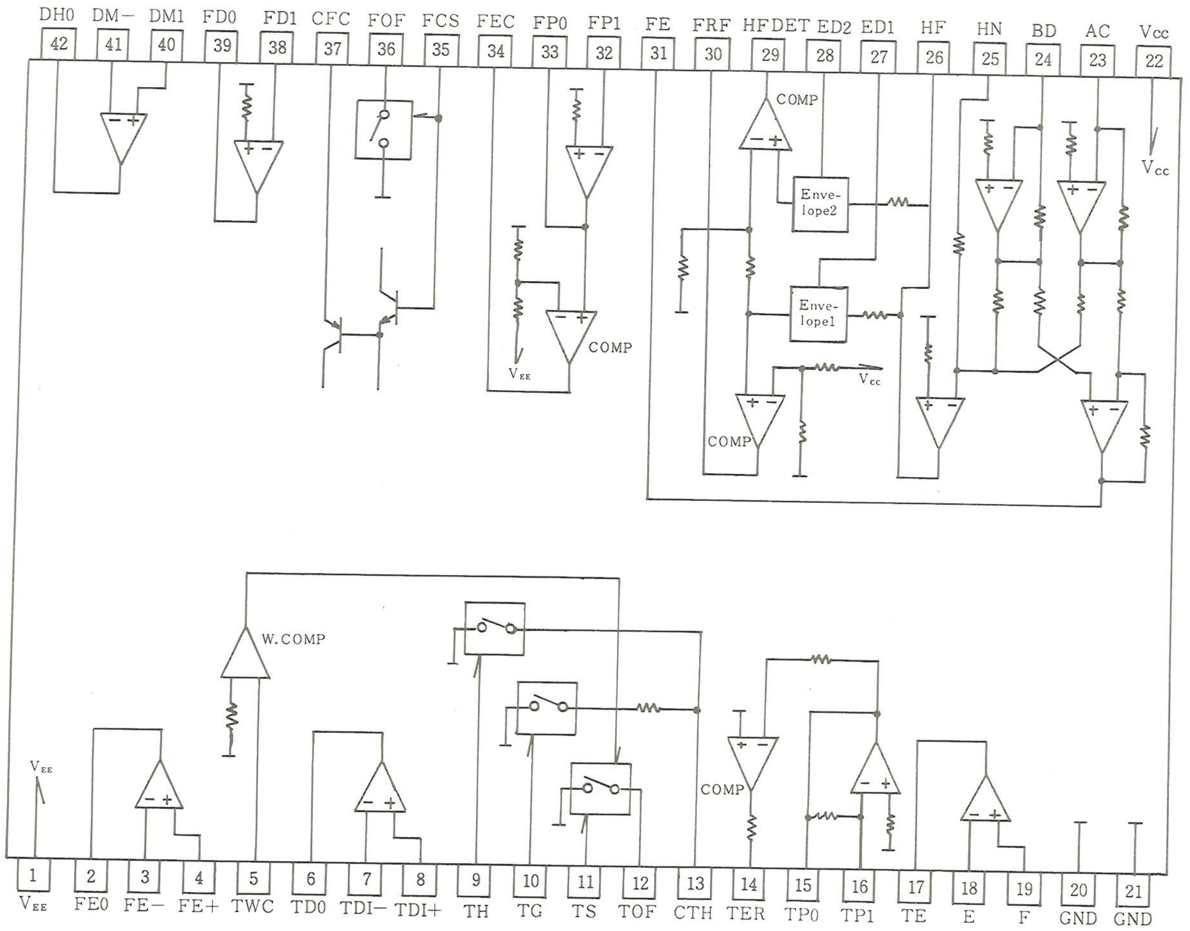

PWR CORD
C701
S701 S/W
BK
F001 250V 200mA
WH

WIRING DIAGRAM

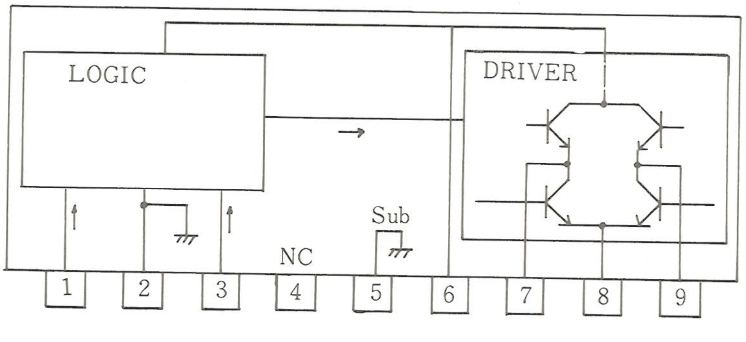

513 – 091A
PWB MAIN
(COMPONENT SIDE)
CNP11
CNP10
CN14
CN13
CN12
BL BL RD BK RD
BL BL RD BK RD
HII+1001
RD BK WH BR BL GY OR GN SB
1
9
CNJ11
SB GN OR GY BL BR WH BK RD
1
8
HHH+1001
RD BK WH BR BL GY OR GN
CNJ10
GN OR GY BL BR WH BK RD
513 – 092 PWB SW
(COMPONENT SIDE)
8
1
6
1
6
1
563 – 657B
563 – 657A
HII+1006
POWER TRANS (641 – 722)
513 – 092A
(COMPONENT SIDE)
CNJ12
SB GN OR GY BL BR WH BK RD
LOADING MOTOR
7 6 5 4 3 2 1
BL BL RD BL RD BL RD
1
8
1
6
L88 – C10R
L88 – B14R
L88 – B10R
PWB OPTICAL
(COMPONENT SIDE)
513 – 092
(COMPONENT SIDE)
WH
BR
BK
WH
BK
WH
POWER CORD
BL BL RD
OPEN / CLOSE SW
513 – 092
(COMPONENT SIDE)
2'
1'
SLIDE MOTOR
4'
3'
T/T MOTOR
513 – 092
(COMPONENT SIDE)

IC INTERNAL DIAGRAM

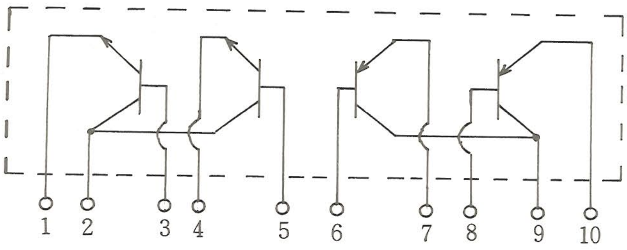
IC101 IG-15630


DH0 42
DM− 41
DM1 40
FD0 39
FD1 38
CFC 37
FOF 36
FCS 35
FEC 34
FP0 33
FP1 32
FE 31
FRF 30
HFDET 29
ED2 28
ED1 27
HF 26
HN 25
BD 24
AC 23
Vcc 22
COMP
Enve-lope2
Enve-lope1
Vcc
VEE
COMP
W.COMP
1 VEE
2 FE0
3 FE−
4 FE+
5 TWC
6 TD0
7 TDI−
8 TDI+
9 TH
10 TG
11 TS
12 TOF
13 CTH
14 TER
15 TP0
16 TP1
17 TE
18 E
19 F
20 GND
21 GND

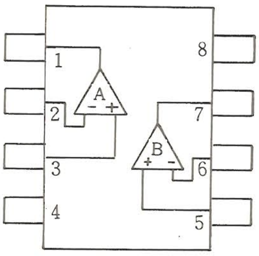
IC104 BA6218


LOGIC
DRIVER
Sub
NC
1
2
3
4
5
6
7
8
9

IC102 STA451C

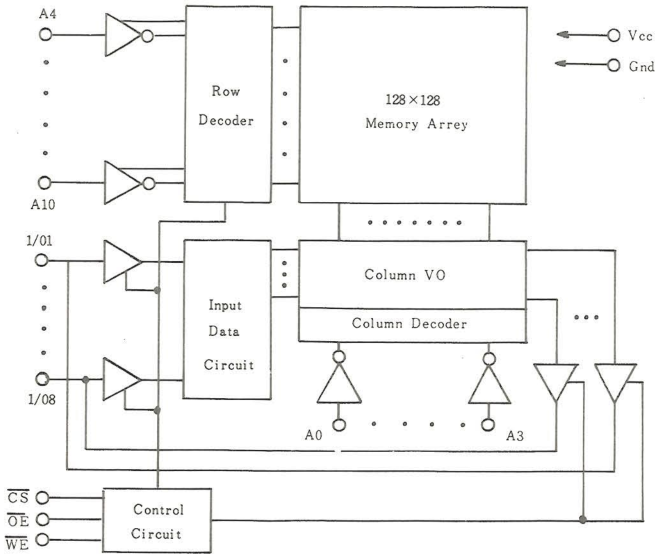

1
2
3
4
5
6
7
8
9
10

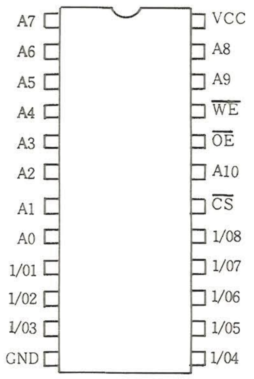
IC201 NJM2043D


1
2
3
4
5
6
7
8
A
B

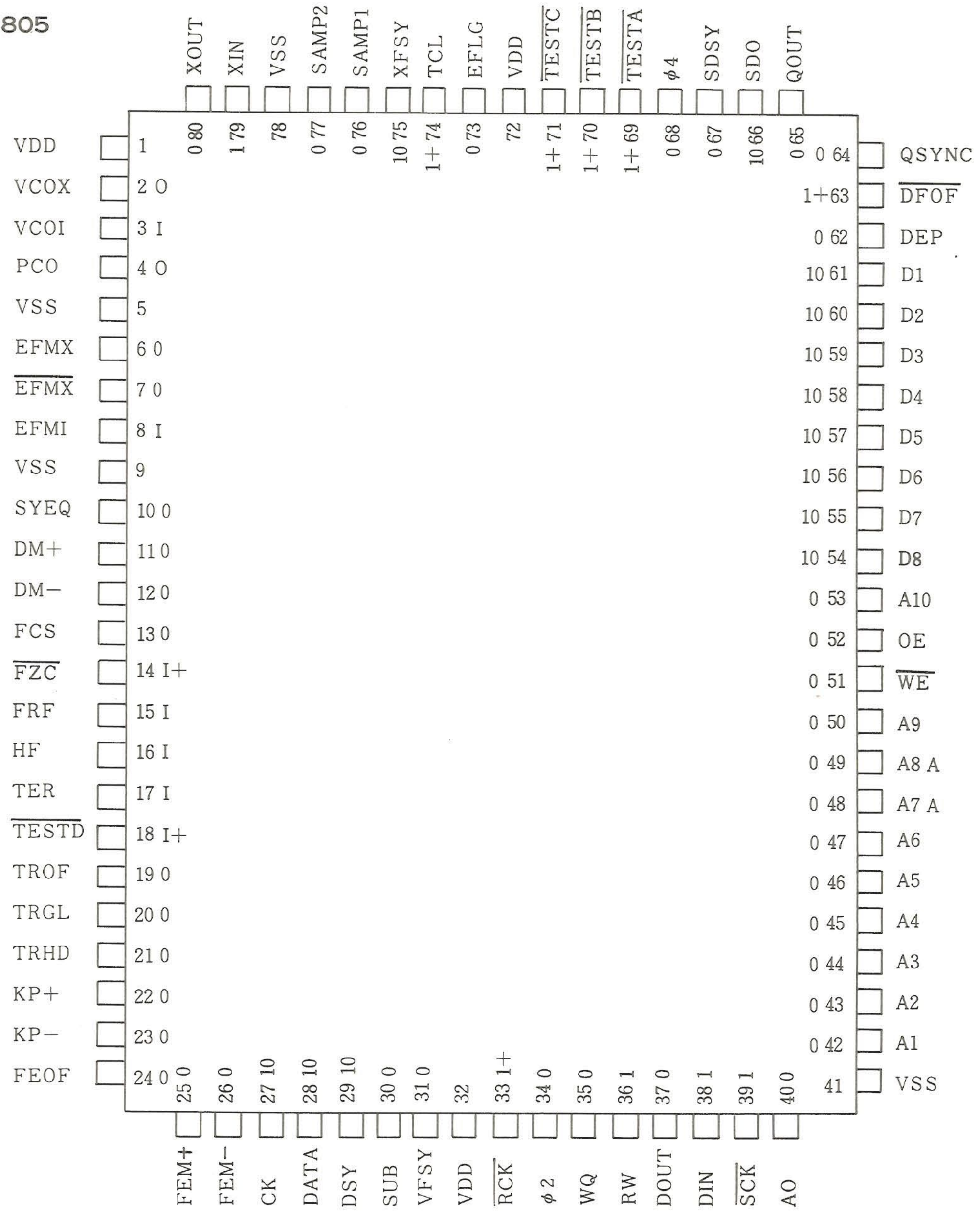
1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁻
5. B+INPUT
6, B−INPUT
7, B OUTPUT
8. V⁺

IC202 HY6116-15

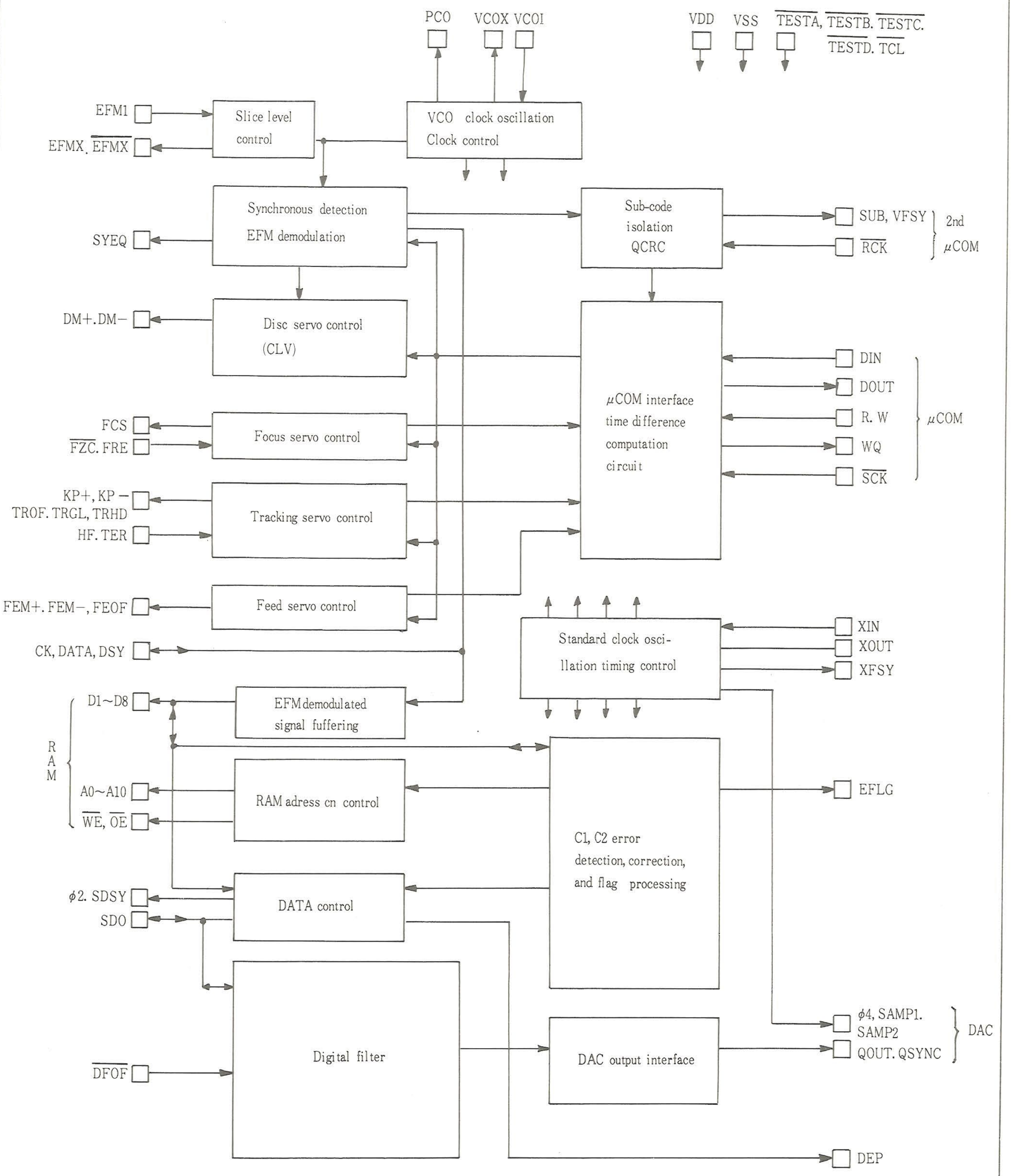

A4
A10
Row
Decoder
128×128
Memory Arrey
Vcc
Gnd
1/01
1/08
Input
Data
Circuit
Column VO
Column Decoder
A0
A3
CS
OE
WE
Control
Circuit


A7
A6
A5
A4
A3
A2
A1
A0
1/01
1/02
1/03
GND
VCC
A8
A9
WE
OE
A10
CS
1/08
1/07
1/06
1/05
1/04

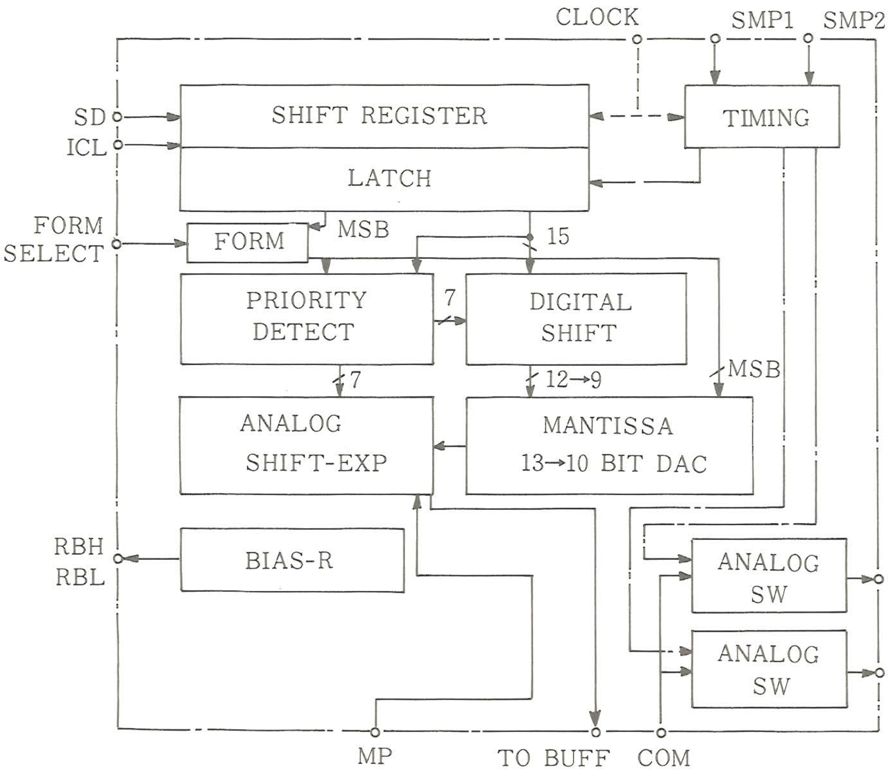
IC203 YM3805

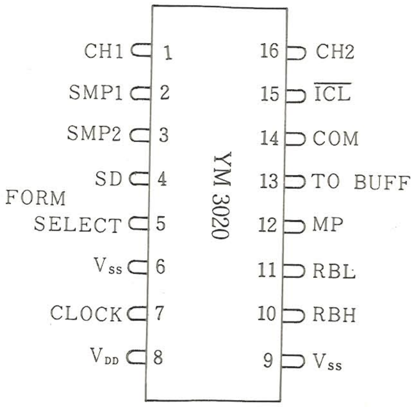

XOUT 0 80
XIN 1 79
VSS 78
SAMP2 0 77
SAMP1 0 76
XFSY 10 75
TCL 1+ 74
EFLG 0 73
VDD 72
TESTC 1+ 71
TESTB 1+ 70
TESTA 1+ 69
φ4 0 68
SDSY 0 67
SDO 10 66
QOUT 0 65
VDD 1
VCOX 2 0
VCOI 3 I
PCO 4 0
VSS 5
EFMX 6 0
EFMX 7 0
EFMI 8 I
VSS 9
SYEQ 10 0
DM+ 11 0
DM− 12 0
FCS 13 0
FZC 14 I+
FRF 15 I
HF 16 I
TER 17 I
TESTD 18 I+
TROF 19 0
TRGL 20 0
TRHD 21 0
KP+ 22 0
KP− 23 0
FEOF 24 0
0 64 QSYNC
1+63 DFOF
0 62 DEP
10 61 D1
10 60 D2
10 59 D3
10 58 D4
10 57 D5
10 56 D6
10 55 D7
10 54 D8
0 53 A10
0 52 OE
0 51 WE
0 50 A9
0 49 A8 A
0 48 A7 A
0 47 A6
0 46 A5
0 45 A4
0 44 A3
0 43 A2
0 42 A1
41 VSS
25 0 FEM+
26 0 FEM−
27 10 CK
28 10 DATA
29 10 DSY
30 0 SUB
31 0 VFSY
32 VDD
33 1+ RCK
34 0 φ2
35 0 WQ
36 1 RW
37 0 DOUT
38 1 DIN
39 1 SCK
40 0 AO

IC203 YM3805

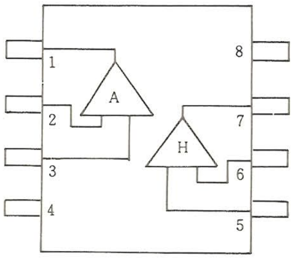

PCO
VCOX VCOI
VDD
VSS
TESTA, TESTB, TESTC.
TESTD, TCL
EFM1
EFMX, EFMX
Slice level control
VCO clock oscillation
Clock control
Synchronous detection
EFM demodulation
SYEQ
Sub-code isolation
QCRC
SUB, VFSY
RCK
2nd
μCOM
DM+.DM−
Disc servo control
(CLV)
μCOM interface
time difference
computation
circuit
DIN
DOUT
R. W
WQ
SCK
μCOM
FCS
FZC. FRE
Focus servo control
KP+, KP −
TROF. TRGL, TRHD
HF. TER
Tracking servo control
FEM+. FEM−, FEOF
Feed servo control
CK, DATA, DSY
Standard clock oscillation timing control
XIN
XOUT
XFSY
D1~D8
EFM demodulated
signal fuffering
R
A
M
A0~A10
WE, OE
RAM adress cn control
C1, C2 error
detection, correction,
and flag processing
EFLG
ϕ2. SDSY
SDO
DATA control
Digital filter
DFOF
DAC output interface
ϕ4, SAMP1.
SAMP2
QOUT. QSYNC
DAC
DEP

IC301 YM3020


CLOCK
SMP1
SMP2
SD
ICL
SHIFT REGISTER
TIMING
LATCH
FORM SELECT
FORM
MSB
15
PRIORITY DETECT
7
DIGITAL SHIFT
7
12→9
MSB
ANALOG SHIFT-EXP
MANTISSA 13→10 BIT DAC
RBH
RBL
BIAS-R
ANALOG SW
CH1
ANALOG SW
CH2
MP
TO BUFF
COM

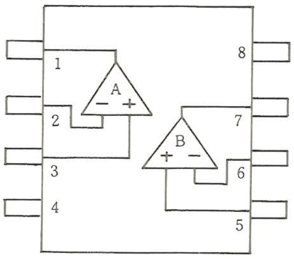

CH1 1
SMP1 2
SMP2 3
SD 4
FORM SELECT 5
Vss 6
CLOCK 7
VDD 8
16 CH2
15 ICL
14 COM
13 TO BUFF
12 MP
11 RBL
10 RBH
9 Vss
YM 3020

IC302. 303 NJM4560D


1
2
3
4
5
6
7
8
A
H

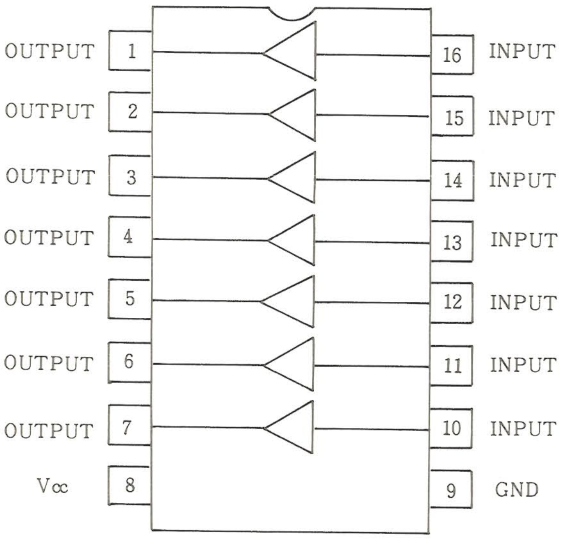
1. A OUTPUT
2. A-INPUT
3. A+INPUT
4. V^-
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V^+

IC304 KA4558

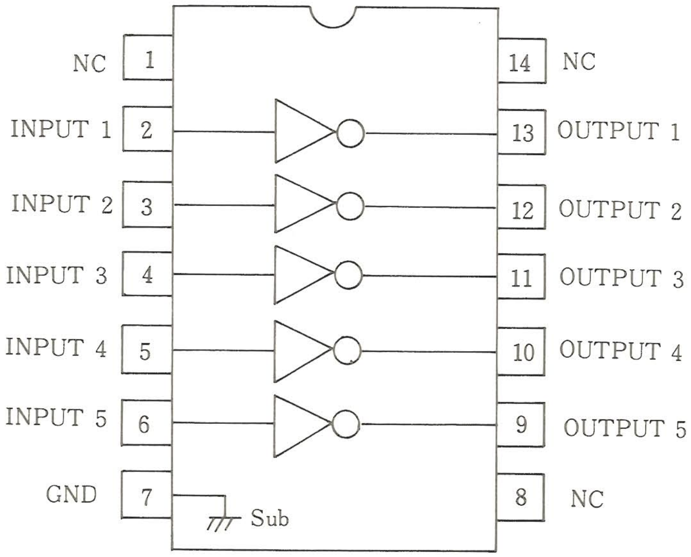

1
2
3
4
5
6
7
8
A
B
−
+

1. A OUTPUT
2. A-INPUT
3. A+INPUT
4. V^-
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V^+

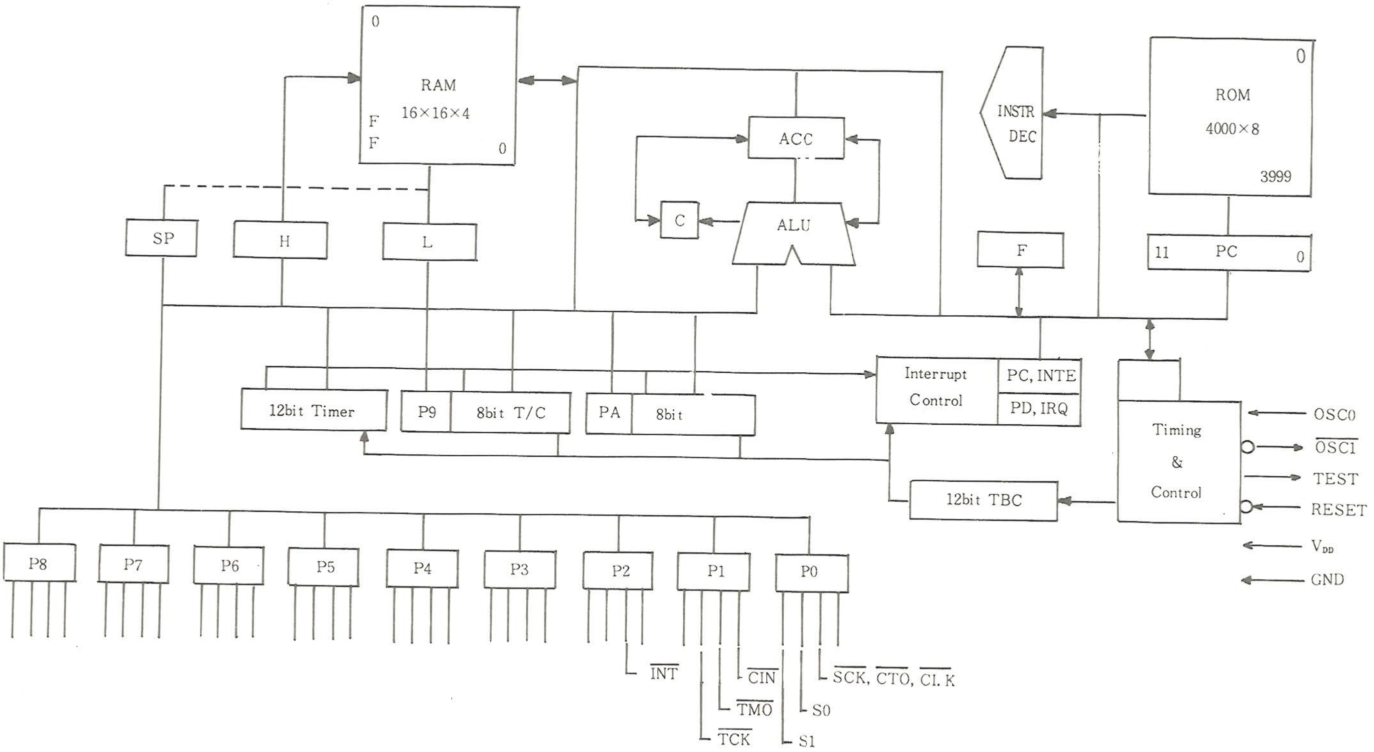
IC501 BA618

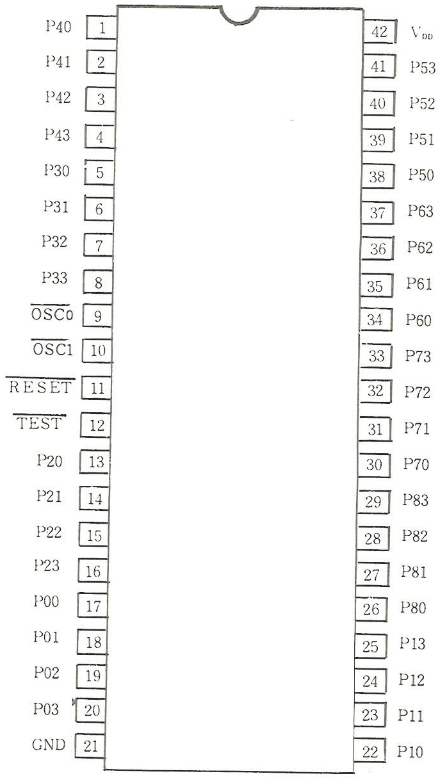

OUTPUT 1
OUTPUT 2
OUTPUT 3
OUTPUT 4
OUTPUT 5
OUTPUT 6
OUTPUT 7
Vcc 8
16 INPUT
15 INPUT
14 INPUT
13 INPUT
12 INPUT
11 INPUT
10 INPUT
9 GND

IC502 BA612


NC 1
INPUT 1 2
INPUT 2 3
INPUT 3 4
INPUT 4 5
INPUT 5 6
GND 7
Sub
14 NC
13 OUTPUT 1
12 OUTPUT 2
11 OUTPUT 3
10 OUTPUT 4
9 OUTPUT 5
8 NC

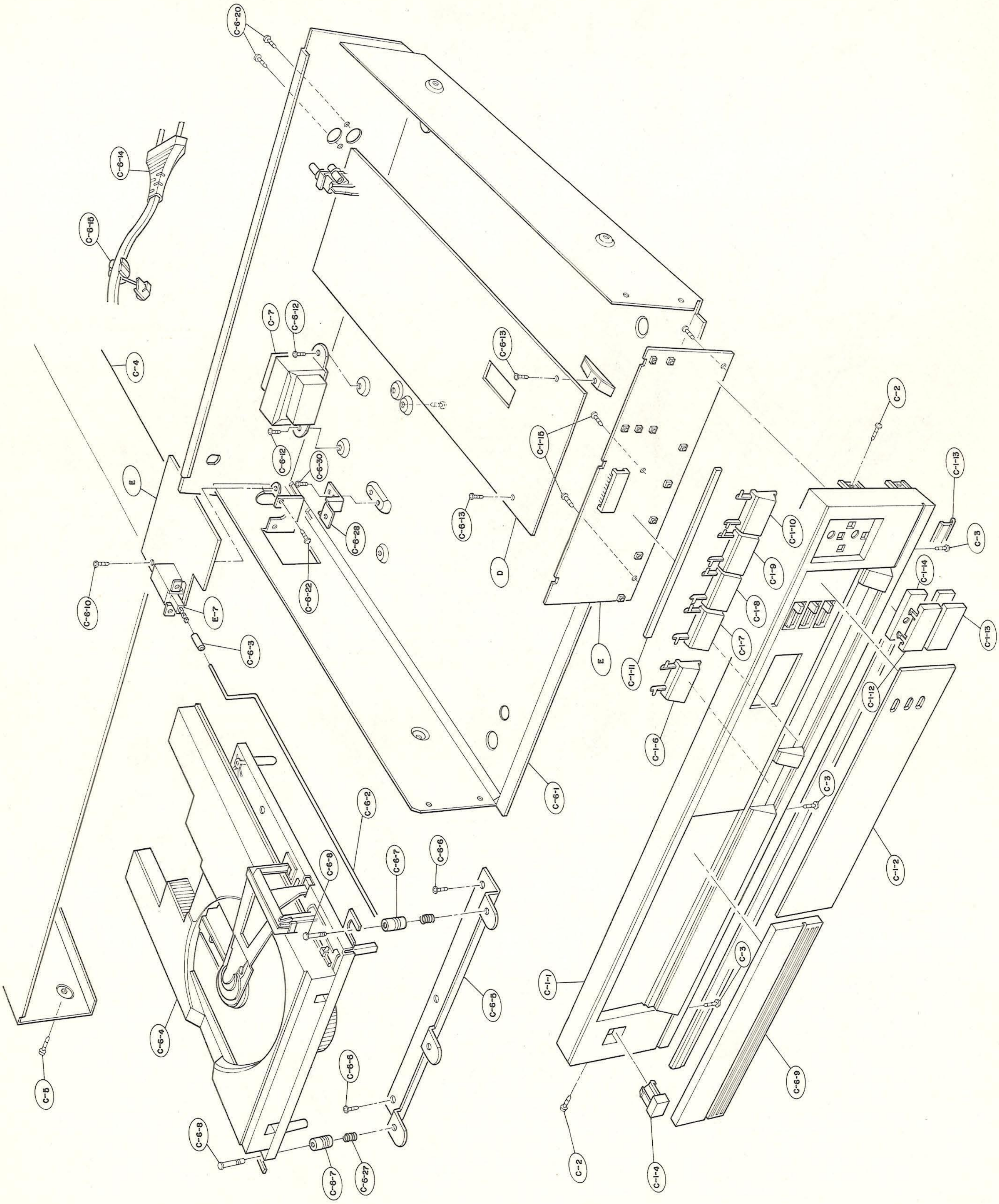
IC401-MSM6404A-74


RAM
16×16×4
0
F
F
0
ACC
C
ALU
INSTR
DEC
ROM
4000×8
0
3999
F
11
PC
0
SP
H
L
Interrupt
Control
PC, INTE
PD, IRQ
Timing
&
Control
OSC0
OSC1
TEST
RESET
V_DD
GND
12bit Timer
P9
8bit T/C
PA
8bit
12bit TBC
P8
P7
P6
P5
P4
P3
P2
P1
P0
INT
CIN
TMO
TCK
SCK, CTO, CL K
S0
S1


P40 1
P41 2
P42 3
P43 4
P30 5
P31 6
P32 7
P33 8
OSC0 9
OSC1 10
RESET 11
TEST 12
P20 13
P21 14
P22 15
P23 16
P00 17
P01 18
P02 19
P03 20
GND 21
42 V_DD
41 P53
40 P52
39 P51
38 P50
37 P63
36 P62
35 P61
34 P60
33 P73
32 P72
31 P71
30 P70
29 P83
28 P82
27 P81
26 P80
25 P13
24 P12
23 P11
22 P10

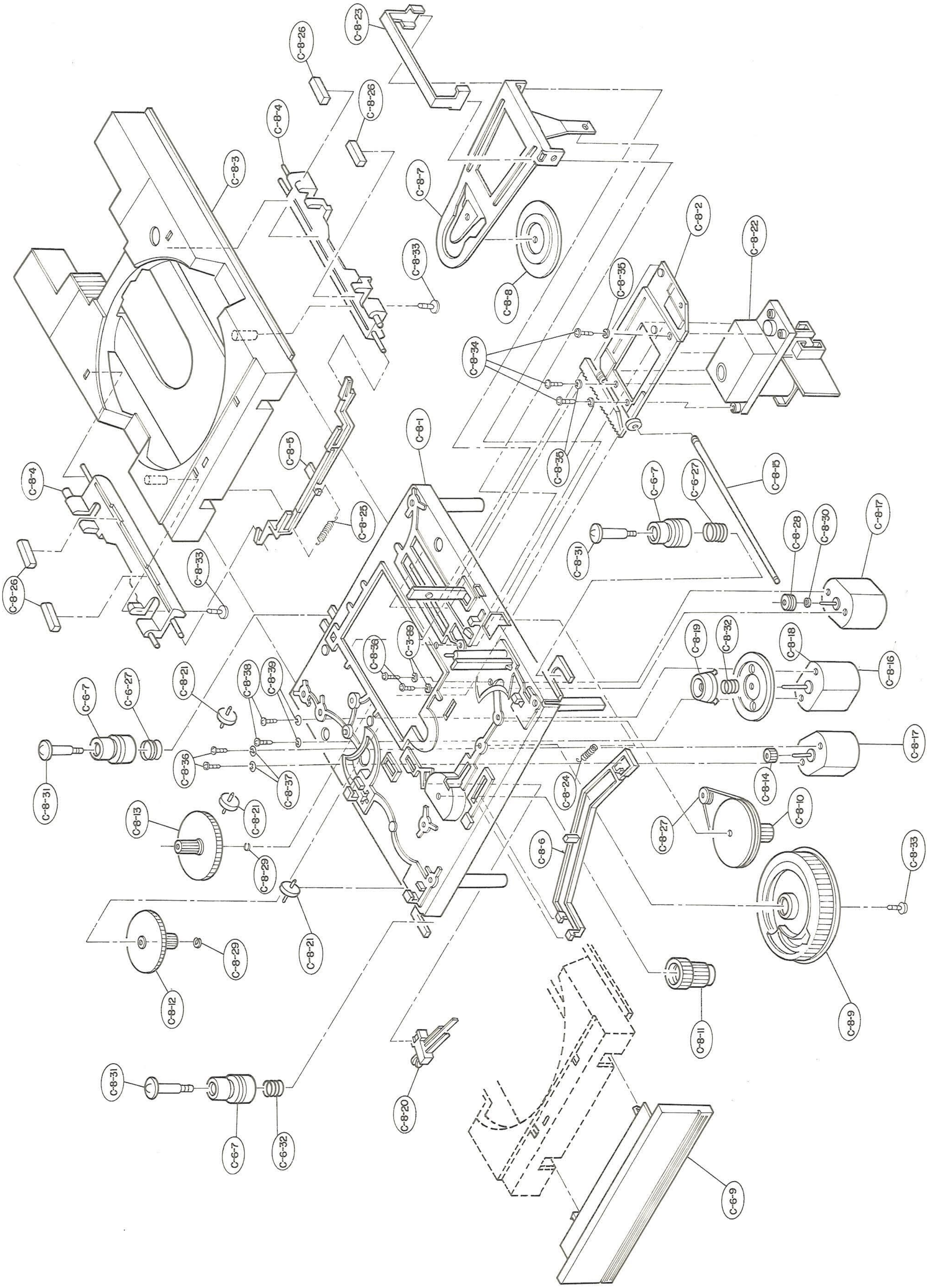
EXPLODED VIEW

Cabinet



C-6-20
C-6-14
C-6-15
C-7
C-6-12
C-4
C-6-13
C-1-15
C-6-12
C-6-30
E
C-6-13
C-6-28
C-6-22
D
C-6-10
E-7
C-6-3
E
C-1-11
C-1-6
C-1-10
C-1-9
C-1-8
C-1-7
C-2
C-1-13
C-3
C-1-14
C-1-13
C-1-12
C-3
C-6-1
C-1-2
C-6-2
C-6-8
C-6-7
C-6-6
C-6-5
C-6-4
C-5
C-1-1
C-3
C-6-9
C-6-6
C-6-8
C-6-7
C-6-27
C-2
C-1-4

Mechanism


C-8-23
C-8-26
C-8-26
C-8-4
C-8-3
C-8-7
C-8-33
C-8-8
C-8-2
C-8-22
C-8-35
C-8-34
C-8-35
C-8-1
C-8-5
C-8-25
C-8-4
C-8-26
C-8-33
C-6-7
C-6-27
C-8-15
C-8-31
C-8-28
C-8-30
C-8-17
C-8-36
C-3-38
C-8-19
C-8-32
C-8-18
C-8-16
C-8-21
C-8-38
C-8-39
C-6-7
C-6-27
C-8-31
C-8-36
C-8-37
C-8-24
C-8-14
C-8-17
C-8-13
C-8-21
C-8-29
C-8-27
C-8-10
C-8-6
C-8-33
C-8-21
C-8-29
C-8-12
C-8-9
C-8-11
C-8-31
C-6-7
C-6-32
C-8-20
C-6-9

REPLACEMENT PARTS LIST

Electrical Parts List

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the safety precaution of this service manual, don't degrade the safety of the receiver through improper servicing.

ABBREVIATIONS: Capacitors .... CC: Ceramic T.C. Type
CE: Electrolytic
CK: Ceramic Hi-K Type
CQ: Polyester

Resistors .... RD: Carbon Film
RN: Metal Film

Tolerance (Not for CE) .... D: ±0.5% J: ±5% K: ±10%
M: ±20% Z: +80%, −20%

(All resistors are 1/6W unless otherwise noted)

Ref. No.	Mfr's Part No.	Description
CAPACITORS		
C001	CK103Z52	CK, 0.01μF-Z 50V
C002	CK103Z52	CK, 0.01μF-Z 50V
C003	CK103Z52	CK, 0.01μF-Z 50V
C004	CK103Z52	CK, 0.01μF-Z 50V
C005	CE108C01 CE228C01	CE, 1000μF 16V (GSDG) CE, 2200μF 16V (GSEI)
C006	CE108C01 CE228C01	CE, 1000μF 16V (GSDG) CE, 2200μF 16V (GSEI)
C007	CE108D01	CE, 1000μF 25V
C008	CE108D01	CE, 1000μF 25V
C009	CE107B51	CE, 100μF 10V
C010	CE107B51	CE, 100μF 10V
C011	CE227C51	CE, 220μF 16V
C012	CE336C51	CE, 33μF 16V
C013	CE107B51	CE, 100μF 10V
C014	CE336C51	CE, 33μF 16V
C015	CE107B51	CE, 100μF 10V
C016	CE227C51	CE, 220μF 16V
C017	CE106C01	CE, 10μF 16V
C018	CK103Z52	CK, 0.01μF-Z 50V
C020	CE106C51	CE, 10μF 16V
C021	CK103Z52	CK, 0.01μF-Z 50V
C101	CE107B51	CE, 100μF 10V
C102	CE107B51	CE, 100μF 10V
C103	CQ152J53	CQ, 0.0015μF 100V
C104	CE336C51	CE, 33μF 16V
C105	CE107B51	CE, 100μF 10V
C106	CQ182J53	CQ, 0.0018μF-J 100V
C107	CQ182J53	CQ, 0.0018μF-J 100V
C108	CQ682J53	CQ, 0.0068μF-J 100V
C109	CQ393J53	CQ, 0.039μF-J 100V
C110	CQ473J53	CQ, 0.047μF-J 100V
C111	CQ184J33	CQ, 0.18μF-J 100V
C112	CC101J51	CC, 100pF-J 50V
C113	CE107B51	CE, 100μF 10V
C114	CE106C51	CE, 10μF 16V
C116	CQ124K03	CQ, 0.12μF-K 100V
C117	CC101J51	CC, 100pF-J 50V
C118	CQ474J33	CQ, 0.47μF-J 100V
C119	CQ184J33	CQ, 0.18μF-J 100V
C120	CQ104J53	CQ, 0.1μF-J 100V
C121	CC331K51	CC, 330pF-K 50V
C122	CQ103J53	CQ, 0.01μF-J 100V
C123	CQ103J53	CQ, 0.01μF-J 100V
C124	CK221K51	CC, 220pF-K 50V
C125	CE107B51	CE, 100μF 10V
C126	CE225F51	CE, 2.2μF 50V
C127	CQ152J53	CQ, 0.0015μF 100V
C128	624-026B	CE, 1μF 50V
C129	CK102K52	CK, 0.01μF-K 50V
C130	CC270J51	CC, 27pF-J 50V
C131	CQ123J53	CQ, 0.012μF-J 100V
C201	CE336B51	CE, 33μF 16V
C202	CE336B51	CE, 33μF 16V
C203	CC471K51	CC, 470pF-K 50V
C204	CK221K51	CC, 220pF-K 50V
C205	CQ332J53	CQ, 0.0033μF-J 100V
C206	CK473Z52	CK, 0.047μF-Z 50V
C207	CQ103J53	CQ, 0.01μF-J 100V
C208	CQ102J53	CQ, 0.001μF-J 100V
C211	CQ332J53	CQ, 0.0033μF-J 100V
C212	CC220J51	CC, 22pF-J 50V
C213	CQ104J53	CQ, 0.1μF-J 100V
C214	CC470J56	CC, 47pF-J 50V
C215	CC470J56	CC, 47pF-J 50V
C302	CE336C51	CE, 33μF 16V
C303	CQ222J53	CQ, 0.0022μF-J 100V
C304	CQ222J53	CQ, 0.0022μF-J 100V
C306	CC680J01	CC, 68pF-J 50V

Ref. No.	Mfr's Part No.	Description
C307	CE106C51	CE, 10μF 16V
C308	CQ683J53	CQ, 0.068μF-J 100V
C309	CQ683J53	CQ, 0.068μF-J 100V
C310	CQ153J53	CQ, 0.015μF-J 100V
C311	CQ153J53	CQ, 0.015μF-J 100V
C312	CQ122J53	CQ, 0.0012μF 100V
C313	CQ122J53	CQ, 0.0012μF 100V
C314	CQ122J53	CQ, 0.0012μF 100V
C315	CQ122J53	CQ, 0.0012μF 100V
C316	CE475F51	CE, 4.7μF 50V
C317	CE475F51	CE, 4.7μF 50V
C318	CQ332J53	CQ, 0.0033μF-J 50V
C319	CQ332J53	CQ, 0.0033μF-J 50V
C320	CE336C51	CE, 33μF 16V
C321	CE336C51	CE, 33μF 16V
C322	CE336C51	CE, 33μF 16V
C333	CE336C51	CE, 33μF 16V
C324	CQ102J53	CQ, 0.001μF-J 100V
C325	CQ102J53	CQ, 0.001μF-J 100V
C401	CE105F51	CE, 1μF 50V
C402	CE226B51	CE, 22μF 10V
C404	CE336B51	CE, 33μF 16V
⚠ C701	624-005B 624-005A	C103P 400V (GSDG) C103P 125V (GSEI)

RESISTORS

Ref. No.	Mfr's Part No.	Description
R004	RD471J26	RD, 470 ohm
R005	RD102J26	RD, 1K ohm
R006	RD471J26	RD, 470 ohm
R007	RD471J26	RD, 470 ohm
R008	RD333J26	RD, 33K ohm
R009	RD203J26	RD, 20K ohm
R010	RD103J26	RD, 10K ohm
R011	RD222J26	RD, 2.2K ohm
R012	RD822J26	RD, 8.2K ohm
R013	RD222J26	RD, 2.2K ohm
R014	RD822J26	RD, 8.2K ohm
R016	RD104J26	RD, 100K ohm
R017	RD223J26	RD, 22K ohm
R018	RD102J26	RD, 1K ohm
R101	RD101J26	RD, 100 ohm
R102	RD333J26	RD, 33K ohm
R103	RD103J26	RD, 100K ohm
R104	RD224J26	RD, 220K ohm
R105	RD223J26	RD, 22K ohm
R106	RD223J26	RD, 22K ohm
R107	RD204J26	RD, 200K ohm
R108	RD222J26	RD, 2.2K ohm
R109	RD223J26	RD, 22K ohm
R110	RD221J26	RD, 220 ohm
R111	RD181J26	RD, 180 ohm
R112	RD822J26	RD, 8.2K ohm
R113	RD223J26	RD, 2.2K ohm
R114	RD224J26	RD, 220K ohm
R115	RD681J26	RD, 680 ohm
R116	RD184J26	RD, 180K ohm

Ref. No.	Mfr's Part No.	Description
R117	RD823J26	RD, 82K ohm
R118	RD274J26	RD, 270K ohm
R119	RD101J26	RD, 100 ohm
R120	RD102J26	RD, 1K ohm
R121	RD222J26	RD, 2.2K ohm
R122	RD222J26	RD, 2.2K ohm
R123	RD102J26	RD, 1K ohm
R124	RD153J26	RD, 15K ohm
R125	RD104J26	RD, 100K ohm
R126	RD104J26	RD, 100K ohm
R127	RD104J26	RD, 100K ohm
R128	RD103J26	RD, 10K ohm
R129	RD103J26	RD, 10K ohm
R130	RD680J26	RD, 68 ohm
R131	RD682J26	RD, 6.8K ohm
R132	RD103J26	RD, 10K ohm
R133	RD103J26	RD, 10K ohm
R134	RD393J26	RD, 39K ohm
R135	RD393J26	RD, 39K ohm
R136	RD393J26	RD, 39K ohm 1/4W
R137	RD563J26	RD, 56K ohm
R139	RD104J26	RD, 100K ohm
R140	RD564J26	RD, 560K ohm
R141	RD683J26	RD, 68K ohm
R142	RD104J26	RD, 100K ohm
R143	RD564J26	RD, 560K ohm
R144	RD394J26	RD, 390K ohm
R145	RD393J22	RD, 39K ohm 1/4W
R146	RD294J26	RD, 390K ohm
R147	RD474J26	RD, 470K ohm
R148	RD183J26	RD, 18K ohm
R149	RD103J26	RD, 10K ohm
R150	RD153J26	RD, 10K ohm
R151	RD222J26	RD, 2.2K ohm
R152	RD682J26	RD, 6.8K ohm
R153	RD103J26	RD, 10K ohm
R154	RD563J26	RD, 56K ohm
R155	RD222J26	RD, 2.2K ohm
R156	RD123J26	RD, 12K ohm
R157	RD2R2J26	RD, 2.2 ohm
R158	RD155J26	RD, 1.5M ohm
R159	RD155J26	RD, 1.5M ohm
R201	RN223J03	RN, 22K ohm 1/4W
R202	RN223J03	RN, 22K ohm 1/4W
R203	RN223J03	RN, 22K ohm 1/4W
R204	RD222J26	RD, 2.2K ohm
R205	RD332J26	RD, 3.3K ohm
R206	RN223J03	RN, 22K ohm 1/4W
R207	RD472J26	RD, 4.7K ohm
R208	RD104J26	RD, 100K ohm
R209	RD152J26	RD, 1.5K ohm
R210	RD223J26	RD, 2.2K ohm
R211	RD221J26	RD, 220 ohm
R214	RD183J26	RD, 18K ohm
R215	RD682J26	RD, 6.8K ohm
R216	RD682J26	RD, 6.8K ohm

Ref. No.	Mfr's Part No.	Description
R217	RD103J26	RD, 10K ohm
R219	RD105J26	RD, 1M ohm
R301	RD473J26	RD, 47K ohm
R302	RD223J26	RD, 22K ohm
R303	RD104J26	RD, 100K ohm
R304	RD104J26	RD, 100K ohm
R305	RD101J26	RD, 100 ohm
R306	RD220J26	RD, 22 ohm
R307	RD471J26	RD, 470 ohm
R308	RD471J26	RD, 470 ohm
R309	RD682J26	RD, 6.8K ohm
R310	RD682J26	RD, 6.8K ohm
R311	RD102J26	RD, 1K ohm
R312	RD181J26	RD, 180 ohm
R313	RD474J26	RD, 470K ohm
R314	RD102J26	RD, 1K ohm
R315	RD181J26	RD, 180 ohm
R316	RD474J26	RD, 470K ohm
R317	RD102J26	RD, 1K ohm
R318	RD102J26	RD, 1K ohm
R319	RD223J26	RD, 22K ohm
R320	RD223J26	RD, 22K ohm
R321	RD102J26	RD, 1K ohm
R322	RD102J26	RD, 1K ohm
R323	RD682J26	RD, 6.8K ohm
R324	RD682J26	RD, 6.8K ohm
R401	RD103J26	RD, 10K ohm
R501	RD181J22	RD, 180 ohm 1/4W
R502	RD181J22	RD, 180 ohm 1/4W
R503	RD181J22	RD, 180 ohm 1/4W
R504	RD181J22	RD, 180 ohm 1/4W
R505	RD181J22	RD, 180 ohm 1/4W
R506	RD181J22	RD, 180 ohm 1/4W
R507	RD181J22	RD, 180 ohm 1/4W
R508	RD104J22	RD, 100K ohm 1/4W
R509	RD104J22	RD, 100K ohm 1/4W
R510	RD104J22	RD, 100K ohm 1/4W

DIODES

Ref. No.	Mfr's Part No.	Description
D001	652-005D	Diode, Rect DS4002
D002	652-005D	Diode, Rect DS4002
D003	652-005D	Diode, Rect DS4002
D004	652-005D	Diode, Rect DS4002
D005	652-005D	Diode, Rect DS4002
D006	652-005D	Diode, Rect DS4002
D008	654-723D	Diode, Zener DZ7.5B
D009	654-723A	Diode, Zener DZ5.6B
D010	654-724B	Diode, Zener DZ12B
D011	654-723E	Diode, Zener DZ8.2B
D012	654-724B	Diode, Zener DZ12B
D013	654-723E	Diode, Zener DZ8.2B
D014	651-003A	Diode, SW DS4148
D015	651-003A	Diode, SW DS4148
D016	654-724C	Diode, Zener DZ13B
D201	654-419A	Diode, Varactor ISV55
D501	651-003A	Diode, SW DS4148
D502	651-003A	Diode, SW DS4148
D503	651-003A	Diode, SW DS4148
D504	651-003A	Diode, SW DS4148
D505	659-022A	LED, Sisplay LC-204 MLE GN

TRANSISTORS

Ref. No.	Mfr's Part No.	Description
⚠ Q003	665-881C	TR, KTC2236AY
⚠ Q004	664-601B	TR, KTD 880-Y
Q005	665-712A	TR, KTA966A-Y
Q006	665-813C	TR, KTA1015-GR
⚠ Q007	665-832B 665-881C	TR, KTC162A-Y (GSDG) TR, KTC2236A-Y (GSEI)
⚠ Q008	665-832B 665-881C	TR, KTC1627A-Y (GSDG) TR, KTC2236A-Y (GSEI)
⚠ Q009	665-833B 665-712A	TR, KTA817A-Y (GSDG) TR, KTA966A-Y (GSEI)
⚠ Q010	665-833B 665-712A	TR, KTA817A-Y (GSDG) TR, KTA966A-Y (GSEI)
Q101	665-812C	TR, KTC1815-GR
Q103	665-712A	TR, KTA966A-Y
Q104	665-881C	TR, KTC2236AY
Q105	665-712A	TR, KTA966A-Y
Q106	665-881C	TR, KTC2236A-Y
Q301	665-813C	TR, KTA1015-GR
Q302	665-812C	TR, KTC1815-GR
Q303	665-812C	TR, KTC1815-GR
Q304	665-812C	TR, KTC1815-GR
Q305	665-812C	TR, KTC1815-GR
Q306	665-813C	TR, KTA1015-GR
Q401	665-813C	TR, KTA1015-GR
Q402	665-813C	TR, KTA1015-GR
Q403	665-813C	TR, KTA1015-GR
Q404	665-812C	TR, KTC1815-GR

INTEGRATED CIRCUITS

Ref. No.	Mfr's Part No.	Description
IC101	668-671A	IC, IG-15630
IC102	668-678A	IC, STA451C
IC104	668-680A	IC, BA6218
IC201	668-051C	IC, NJM2043D
IC202	668-508C	IC, HY6116-15
IC203	668-675A	IC, YM3805
IC301	668-676A	IC, YM3020
IC302	668-536A	IC, NJM4560D
IC303	668-536A	IC, NJM4560D
IC304	668-015D	IC, KA4558
IC401	668-677A	IC, MSM6404A-74
IC501	668-666C	IC, BA618
IC502	668-666B	IC, BA612

MISCELLANEOUS

Ref. No.	Mfr's Part No.	Description
L201	638-603B	Coil, 8.6436MHz
VR101	613-022C	VR, Semi-Fixed 47KB
VR102	613-022A	VR, Semi-Fixed 10KB
VR103	613-022D	VR, Semi-Fixed 100KB
VR104	613-022A	VR, Semi-Fixed 10KB

Ref. No.	Mfr's Part No.	Description
VR105	613-022D	VR, Semi-Fixed 100KB
S501-510	558-908A	SW, Tact, KH10902 DAD
⚠ S701	554-612B	SW, Power
X201	617-602C	Cristal 8.6436MHz
J601	576-002B	Jack Block S-436P
⚠ F001	585-202C 585-328B	Fuse, 250V 0.2A (GSDG) Fuse, 250V 0.3A (GSEI)
	586-001C	Fuse Clip 5×20 Pin Type

Cabinet Parts List

Ref. No.	Mfr's Part No.	Description
A-9	564-017E 564-017A	Cord Phono 700m/m (GSDG) Cord Phono 700m/m (GSEI)
C-1	258-968B	Front Panel Ass'y
C-1-1	258-967B	Front Panel
C-1-2	236-258A	Window LED
C-1-4	273-716C	Knob, Power
C-1-6	273-078A	Knob, Operation-Open/Close
C-1-7	273-078B	Knob, Operation-BWD
C-1-8	273-078C	Knob, Operation-FWD
C-1-9	273-078D	Knob, Operation-REV
C-1-10	273-078E	Knob, Operation-F.F.
C-1-11	447-004A	Cushion, Knob (B)
C-1-12	273-077A	Knob, Play/(Stop, pause)
C-1-13	273-077B	Knob, (Play)/Stop, Pause
C-1-14	447-003A	Cushion, Knob (A)
C-1-15	353-025E	Screw, Special
C-1-16	447-004B	Cushion, Knob Open Close
C-2	TRQ1830J	Screw, TRQ2+3×6A
C-3	TCQ1830J	Screw, Tapping TC3+3×6
C-4	213-001A	Cabinet
C-5	353-072D	Screw, Special
C-6-1	313-305C 313-305B	Chassis Main (GSDG) Chassis Main (GSEI)
C-6-2	333-171A	Lever P/Switch
C-6-3	477-002A	Rubber, Connecting
C-6-5	321-604A	Bracket, M/D
C-6-6	TRQ2230J	Screw, TRQ2+4×6A
C-6-7	447-005A	Rubber, VIB Proof
C-6-9	246-003A	Decoration, M/D
C-6-10	TRQ1830J	Screw, TRQ2+3×6A
C-6-11	353-052C	Screw, Special
C-6-12	TRQ2230J	Screw, TRQ2+4×6A
C-6-13	TRQ1830J	Screw, TRQ2+3×6A
⚠ C-6-14	681-039F 681-039D	Power Cord (GSDG) Power Cord (GSEI)
C-6-15	324-348A	Holder, Cord
C-6-20	353-025C	Screw, Special
C-6-21	472-610B	Felt
C-6-22	MRC1830J	Screw
C-6-24	324-022A	Holder, Transfer
C-6-25	352-027H	Nut
C-6-26	353-025R	Screw, Special Tapping 2×6
C-6-27	442-634Z	Spring, VIB
C-6-28	321-605A	Bracket, M/D
C-6-29	447-907H	Cushion
C-6-30	TPQ1830J	Screw, TPQ2+3×6A
C-6-32	442-664D	Spring VIB
⚠ C-7	641-722C 641-722B	Trans, Power 220V (GSDG) Trans, Power 120V (GSEI)
C-8	411-103A	Mechanism Ass'y
D	511-091A	PCB Ass'y, Main
E	511-092C 511-092A	PCB Ass'y, Switch (GSDG) PCB Ass'y, Switch (GSEI)

NOTE : Front Panel Ass'y (C–1) will be supplied Front Panel (C–1–1) and window LED (C–1–2).

Mechanism Parts List

Ref. No.	Mfr's Part No.	Description
C-8	411-103A	Mechanism Ass'y
C-8-1	313-052A	Chassis Ass'y
C-8-2	225-002A	Pu Base Gas
C-8-3	228-001A	Box
C-8-4	256-025A	Table Plate
C-8-5	385-010A	Slide
C-8-6	333-009A	Lock Lever
C-8-7	386-101A	Chuck Arm
C-8-8	327-002A	Disc Clamp
C-8-9	374-001A	Loading Cam
C-8-10	435-015A	Loading Gear-A
C-8-11	435-016A	Loading Gear-B
C-8-12	435-017A	Pu Gear-A
C-8-13	435-018A	Pu Gear-B
C-8-14	435-019A	Motor Gear
C-8-15	423-005A	Pu Base Shaft
C-8-16	414-001A	Spindle Motor
C-8-17	414-002A	Loading Motor
C-8-18	424-001A	Spindle Table
C-8-19	385-011A	Slide Ring
C-8-20	558-030A	Leaf SW
C-8-21	384-004A	Guide Roller
C-8-22	411-101A	Optical Pick up
C-8-23	322-002A	Supporter
C-8-24	442-050A	Spring, Compression
C-8-25	442-051A	Spring
C-8-26	477-007A	Rubber, Disc Guide
C-8-27	451-002A	Loading Belt
C-8-28	432-049A	Pulley, Motor
C-8-29	354-006A	Washer
C-8-30	354-007A	Washer
C-8-31	353-007A	Screw, Special
C-8-32	442-021A	Spring Slide Ring
C-8-33	353-0520	Screw, Special
C-8-34	MPC1526J	Screw
C-8-35	WSB15000	Waher, Spring
C-8-36	MPC0922J	Screw
C-8-37	WSB0900O	Washer, Sping
C-8-38	MPC0930J	Screw
C-8-39	WSB0900O	Washer Spring
C-8-40	353-025G	Screw, Special